DEFENSE INFORMATION SYSTEMS AGENCY
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DISA CIRCULAR 310-55-9 5 November 1999

OPERATIONS

Base Level Support for the Defense Information System Network (DISN)

1. **Purpose**. This Circular delineates the Service and Agency (S/A) responsibilities for base level support of the Defense Information System Network (DISN) on their respective bases, posts, camps, and stations. The Circular outlines general node site administrative requirements and procedures and describes general node site features, while the supplements offer the opportunity for Program Managers (PMs) to provide information which is specific to their equipment and the way business is conducted between their program management offices, the supporting Regional Network Operations and Security Centers (RNOSCs), and the supporting Services/Agencies.

2. **Applicability**. This Circular applies to the Defense Information Systems Agency (DISA), the military departments, DOD agencies, and civilian activities responsible for the operation and maintenance of elements of the Defense Information Infrastructure (DII) and related communications activities.

3. **Authority**. This Circular is published in accordance with the authority contained in DOD Directive 5105.19, Defense Information Systems Agency (DISA), 25 June 1991.

4. **References**.

4.1 DISAC 310-70-1, DII Technical Control, 25 June 1998.

4.2 DISAC 310-130-1, Submission of Telecommunications Service Requests, 23 July 1992.

4.3 DISAC 300-85-1, Reporting of DCS Facility and Link Data, 6 April 1993.

5. **Glossary of Terms.** A glossary of terms follows the table of contents.

6. **Scope.** This Circular applies only to Internet Protocol Router (IPR), Integrated Digital Network Exchange (IDNX), and Asynchronous Transfer Mode (ATM) networks. Supplements have been included for specific equipment suites. When deviation occurs in equipment, logistics, or management of some nodes, the supplement for the specified equipment will take precedence over the basic publication.

7. **Responsibilities**. DISA has responsibility for planning, programming, implementing, and operating long-haul DISN service which is provided to Service Delivery Points. Services and Agencies have responsibility for planning, programming, budgeting, and funding local DISN service and support within their base/post/camp/station area of responsibility and for designating Node Site Coordinators.

FOR THE DIRECTOR:

PAUL T. HAUSER
Captain, USN
Chief of Staff

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Continue to:
Table of Contents

Return to:
Publication Listing
DISA Home Page

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GLOSSARY OF TERMS

A/O	authorized outage
ADNX	Automated Digital Network Exchange
AEC	ancillary equipment cabinet
ASC	Autodin Switching Center
ATM	asynchronous transfer mode
BGP	Border Gateway Protocol
BGP3	Border Gateway Protocol Version 3
bps	bits per second
CCO	Communications Control Office
CMO	Communications Management Office
CONUS	Continental United States
CPPP	Compressed Point-to-Point Protocol
CPU	central processing unit
CS	communications server
CSU	Channel Service Unit
CxBus	Cisco Extended Bus
DCE	Data Communication Equipment
DII	Defense Information Infrastructure
DISA	Defense Information Systems Agency
DISN	Defense Information System Network
DLSw	Data Line Switching
DOD	Department of Defense
DRAM	dynamic random access memory
DSU	data service unit
DTE	data terminal equipment
E&I	engineering and installation
EIA	Electronic Industries Association
EIP	Engineering Installation Plan
EIP	Ethernet Interface Processor
e-mail	electronic mail
EPROM	erasable programable read-only memory
FDDI	Fiber Distributed Data Interface
FDX	Full-Duplex
FR	Frame Relay
FTP	File Transfer Protocol
GNOSC	Global Network Operations and Security Center
GPS	Global Positioning System
HSSIP	High-Speed Serial Interface Processor
Hz	Hertz

IAW	in accordance with
IDF	intermediate distribution frame
IDNX	Integrated Digital Network Exchange
IIP	initial installation plan
I/O	input/output
IOS	Internetwork Operating System
IP	Internet Protocol
IPR	Internet Protocol Router
IST	interswitch trunk
ITSDN	Integrated Tactical/Strategic Data Network
JILSP	Joint Integrated Logistics Support Plan
kbps	kilobits per second (see bps)
LAN	local area network
LCC	local control center
LN	link node
LRU	line replaceable unit
LSR	local service request
MAU	media attachment unit
Mbps	megabits per second
MCI	Multiport Communications Interface
MDF	main distribution frame
NET	Network Equipment Technologies, Inc
NIC	Network Information Center
NIPRNET	Nonclassified IP Router Network
NMS	Network Monitoring System
NSC	Node Site Coordinator
O&M	operations and maintenance
PAO	Property Accountable Officer
PLA	plain language address
POC	point of contact
PPP	Point-to-Point Protocol
PR	premise router
RAM	random access memory
RJ	radio jack
RNOSC	Regional Network Operations and Security Center
RP	Route Processor
ROM	read-only memory
S/A	Service and Agency
SCL	Site Concurrence Letter
SIMM	Single In-Line Memory Module

SIPRNET	Secret IP Router Network
SLIP	Serial Line Interface Protocol
SMDS	Switched Multimegabit Data Services
SNMP	Simple Network Management Protocol
SME	Synchronous Modem Eliminator
SP	Switch Processor
SPAN	Spanning Tree Protocol
SR	Source Routing Protocol
TCP	Transmission Control Protocol
TRIP	Token Ring Interface Processor
TSIP	Telecommunications System Installation Plan
TSO	Telecommunications Service Order
TSP	Telecommunications Service Priority
TSR	Telecommunications Service Request
UPS	United Parcel Service
WAN	wide area network
VF	voice frequency

Return to:
Basic Circular
Table of Contents
Publication Listing

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

CONTENTS

FIGURES

TABLES

Continue to:
CHAPTER 1. OVERVIEW OF DISN

Return to:
Basic Circular
Publication Listing
DISA Home Page

PDF version of This Circular

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

C1. CHAPTER 1. OVERVIEW OF THE DEFENSE INFORMATION SYSTEM NETWORK

C1.1 **General**. The Defense Information System Network (DISN), a subelement of the Defense Information Infrastructure (DII), is the DOD consolidated worldwide enterprise level telecommunications infrastructure that provides the end-to-end information transfer network for supporting military operations. It is transparent to the users, facilitates the management of information resources, and is responsive to the national security and defense needs under all conditions in the most efficient manner.

C1.1.1 The DISN is comprised of several networks that are being engineered with standard hardware and software configurations.

C1.1.2 The DISN primarily employs internet protocol router (IPR) technology and Asynchronous Transfer Mode (ATM) technology. The DISN consists of multiplexers, routers, and ATM switches.

C1.1.3 Network control and quality assurance are provided by specially configured host computers with Network Monitoring System (NMS) software and trained controllers at the Regional Network Operations and Security Centers (RNOSCs). The RNOSCs are available for assistance 24 hours-per-day, 7 days-a-week.

C1.2 **DISN Access**.

C1.2.1 A variety of methods to access the network are provided. Hosts may be directly connected to a hub router or an ATM switch; however, most Services and Agencies (S/As) will have a premise router (PR) attached to a hub router. Subscriber hosts may then be directly connected at the PR or attached through the S/As local area network (LAN). Terminals may also be connected to the network through a communications server (CS) via direct connect or dial-up. The dial-up connections can be reached using a standard phone line and modem.

C1.2.2 Currently, DISN networks carry millions of datagrams and cells each day through networks which employ multiple nodes and link thousands of host computers and users worldwide.

Continue to:
CHAPTER 2. NODE SITE COORDINATOR DUTIES

Return to:
Basic Circular
Table of Contents
Publication Listing
DISA Home Page

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

C2. **CHAPTER 2. NODE SITE COORDINATOR DUTIES**

C2.1 **General.**

C2.1.1 The DISN node site is the physical location of the DISN equipment. Normally, this equipment consists of an Internet Protocol Router (IPR) node, an asynchronus transfer mode (ATM) node, or Integrated Digital Network Exchange (IDNX)/Automated Digital Network Exchange (ADNX) communications cabinets, modems, and, in some cases, a communications server and encryption cabinets. The Node Site Coordinator (NSC) is the designated representative of the sponsoring communications or information systems command or agency. The NSC is authorized by the Command or Agency to:

C2.1.1.1 Coordinate, at the node site, the physical site preparation and the installation and activation of node, Interswitch Trunks (ISTs), and access circuit equipment. The NSC will arrange for the installation of cables between the DISN node and the local user's equipment. (This coordination includes interactions with the Regional Network Operations and Security Centers (RNOSCs), local telephone personnel, and Services and Agencies (S/A) operation and maintenance (O&M) or engineering and installation (E&I) activities. Contractor personnel install and configure the DISN node equipment.)

C2.1.1.2 Ensure 24-hour, 7 days-per-week continuous operation of the node by providing or making provisions for local site assistance in case of node or circuit degradation or outages.

C2.1.1.3 Accomplish the administrative duties described in paragraph C2.3.

C2.1.2 The NSC will have a designated alternate NSC and may delegate some tasks to the alternate; however, the NSC is responsible for all network node site matters. The NSC will preferably be a government employee within the local area or a member of the sponsoring communications information systems O&M command or agency subunit having responsibility for the facility in which the node is located.

C2.1.2.1 Individuals selected as NSCs will be notified in writing (normally by the unit commander or operations supervisor) and acknowledge that they are responsible for the duties contained in this Circular.

C2.1.2.2 The NSC will inform the appropriate RNOSC of all changes to NSC and alternate NSC assignment; i.e., name, address, telephone number, e-mail address, Plain Language Address (PLA), etc., in order to keep a current database of all DISN NSCs. This may be accomplished by letter or electronic mail to the appropriate address (IP Routers,

IDNX, ATM).

C2.1.3 The NSC will be aware of the location of all DISA equipment (building number and floor and room location) in their area of responsibility.

C2.2 **Local Onsite Technical Assistance**. The NSC will personally provide or arrange for provision of local onsite assistance to the RNOSC on a 24 hours-per-day, 7 days-per-week basis. If the node site is located in a facility that is not manned on a 24 hours-per-day, 7 days-per-week basis, the NSC will ensure that local onsite assistance is provided within 2 hours of receiving a request from the RNOSC. The NSC will notify the RNOSC whenever a site cannot be entered outside of normal duty hours or whenever the 2-hour limit will be exceeded. These procedures are necessary for the RNOSC to be able to assess the effects of an outage at that node. Arrangements need to be made with the NSC's command for overtime or compensatory time, as required, to fulfill the duties in this Circular.

C2.2.1 The NSC and alternate NSC will provide operational assistance under the telephonic instruction of RNOSC controllers. Unless directed by DISA, local site personnel will not attempt to interfere with, tamper with, or perform hands-on maintenance, other than external cleaning, on any of the DISN node site equipment. Site personnel are responsible for all circuits within their facility up to the designated demarcation point and will provide troubleshooting assistance at the direction of the RNOSC.

C2.2.2 The NSC will coordinate and monitor scheduled and unscheduled corrective maintenance and will allow for scheduled preventive maintenance as directed by the RNOSC. The NSC will perform scheduled preventive maintenance checks of the DISN equipment and the associated node site records, as outlined in paragraph C2.6, and report deficiencies to the appropriate RNOSC. The NSC will also coordinate authorized outages (A/Os) with their respective users, RNOSC, Global Network Operations and Security Center (GNOSC), and the network manager.

C2.2.3 The NSC will ensure that local network element monitoring procedures, as required by DISAC 310-70-1, DII Technical Control (reference 4.1), are accomplished upon receipt of the specific direction.

C2.3 **General Administrative Duties**. The NSC is responsible for general administration of the node site as presented in the following subparagraphs:

C2.3.1 **Hardware Accountability**.

C2.3.1.1 The NSC provides for care and safekeeping of all installed node equipment and equipment shipped to the node site for future installation. The DISN Joint Integrated Logistics Support Plan (JILSP) will be consulted for specific equipment accountability procedures. Typically, node site equipment will be shipped to the node site prior to the installation. The installing team will arrange for transfer of the equipment and will assist the NSC with arranging for transfer of custodial responsibility in accordance with S/A procedures. The node site equipment remains DISA property although it may be entered in the property book or equipment records of the site for custodial purposes.

C2.3.1.2 The NSC may be requested to provide temporary storage of some node circuit activation or modification parts, assemblies, and materials. These items are normally expected to be relatively small; e.g., cable assemblies, modems, etc. This material will typically need to be retained for only a few days.

C2.3.2 **Site Access Control and Security**.

C2.3.2.1 The NSC regulates access to the node site. The network manager will provide the NSC with an initial roster of DISA personnel who are authorized access to node site equipment. Additions to this roster may be made by the DISA Network Manager, DISN Networks Branch, or the RNOSC. The NSC will add names to this roster, as required, inform the RNOSC of such changes, and maintain a copy of the current access roster to the site's DISN equipment.

C2.3.2.2 The NSC will ensure that installed node site equipment is not altered, tampered with, or moved without proper authorization from and coordination with the DISA Operations Directorate (D3).

C2.3.2.3 The NSC shall implement site physical security procedures as specified in applicable DOD and Service directives. These directives are incorporated into the DISN Security Architecture. The Initial Installation Plan (IIP) for each site will reflect the specific security requirements for a given site.

C2.3.3 **Carrier and Cable Access for Tail Circuits**. The NSC shall assist circuit implementation coordinators, S/A E&I activities, and commercial telephone company installation or maintenance personnel by coordinating the assignment of cable pairs or channels on local carrier systems, as requested. Any required local service requests (LSRs) will be the administrative responsibility of the NSC. NSC responsibility for end customer tail circuits varies dependent upon which of the types of circuit is required. (These circuits may be single circuits or they may be combined electrically (bundled) with

other circuits.)

C2.3.3.1 **Local Tail Circuit**. The end customer is on the base and requires dry (i.e. no voltage applied) cable pairs or other clear channel media between the DISN node site and the customer's location. The user is responsible for any coordination required to provide the cables to their site.

C2.3.3.2 **Commercial Tail Circuit**. The end customer may or may not be located on the base. A leased tail is required between the DISN node and the customer's location; the NSC is responsible for ensuring that commercial telephone company installers are provided access to the node site.

C2.3.4 **General Administration and Coordination**.

C2.3.4.1 The NSC will maintain documentation issued by DISA and the RNOSC, e.g., DISA Circulars, Management Bulletins, etc. (Documentation will be provided by DISA D3.)

C2.3.4.2 The NSC is the focal point for node site operations. The NSC will maintain close contact with all network entity points-of-contact (i.e., users, RNOSC, local telephone service personnel, etc.) and will maintain a list of telephone numbers to support both liaison and local site assistance functions. This list will include as a minimum, the RNOSCs, the point of contact (POC) for each connected host at that site, and other telephone numbers such as those of the servicing telephone company, the local technical control, the local communications O&M unit representative, and contract personnel who are responsible for equipment maintenance, etc.

C2.3.4.3 The NSC is normally designated as the node site POC on all Telecommunications Service Requests (TSRs) and Telecommunications Service Orders (TSOs) for access circuits and interswitch trunks (ISTs) terminating at the node site. The Local Control Center (LCC) (formerly known as Technical Control Facility) is assigned Communications Control Office (CCO) responsibilities for access circuits and ISTs terminating at the node site. In the event there is no servicing LCC, the Communications Management Office (CMO) duties may be assigned to a RNOSC, GNOSC, or NSC associated with the circuit. The appointed CMO will maintain a file of correspondence for these circuits in this circumstance.

C2.3.4.4 The NSC shall retain up-to-date node configuration documentation. This documentation will normally consist of a Telecommunications System Installation Plan (TSIP) or Engineering Installation Plan (EIP), the Site Concurrence Letter (SCL), the original Telecommunications Service Request (TSR), and

Telecommunications Service Order (TSO) and will be delivered to the NSC during node activation. The NSC will also retain all documentation relating to changes in the node configuration. Change documentation will normally consist of new TSRs, TSOs, and engineering plans. The NSC will coordinate all changes with the RNOSC to help ensure that master node configuration records match those at the site.

C2.4 **Node Site Survey Assistance**. DISN node site surveys are conducted by one or more offices within DISA. These surveys require some support on the part of the host base. This support may represent the first contact on the part of the NSC with the various parties involved with set-up, test, and operations of the DISN node.

C2.4.1 DISA requires the S/A designate a POC for the site survey. This POC may be the NSC or alternate NSC.

C2.4.2 Prior to the site survey, the NSC will arrange for conference room space to be used by the survey team. The NSC will also ensure that POCs from all local organizations affected by the installation and operation requirements for the node site attend the site survey. At a minimum, this includes the node site hosting organization and local telecommunications personnel.

C2.4.3 The NSC will coordinate local assistance, as required, to successfully complete the site survey. This may include support to complete the SCL. The SCL will be signed by the NSC and the Site Commander.

C2.5 **Node and Circuit Installation Assistance**.

C2.5.1 To facilitate implementation of DISN nodes, IST circuits, and user access to the DISN, the NSC will coordinate the installation and activation of node equipment, software, and circuitry as requested by DISA. Upon receipt of a TSR/TSO, the NSC will review the TSO to ensure the requirement is correctly identified. If a change is necessary, the NSC will contact the project manager or engineer identified in the TSO. If a change is necessary, the NSC will advise the CCO/CMO to inform the appropriate TSO-issuing authority. Corrections to the TSR or TSO will be made as far in advance as possible of the circuit installation. If requested by DISA, the NSC will also verify that the equipment received or on hand is sufficient for the implementation. The NSC will inform the CCO/CMO if any delays are encountered which would result in a scheduling slip.

C2.5.2 The NSC monitors the work of government personnel, O&M commands, DISN contractors, and other commercial vendors supporting the DISN node site. The NSC will notify the RNOSC via telephone, electronic mail, or front-channel message whenever government

personnel or contractor work performance problems are observed or when the NSC suggests improvements to the DISN node site. As part of this duty, the NSC permanently maintains a log of all delivery, installation, and maintenance activities at the node site. Equipment items, e.g. cables, received for installation will be opened and inspected after the arrival of the installation team. The following minimum tasks will be completed by DISN installation contractors prior to acceptance of the completed work:

C2.5.2.1 Node and auxiliary equipment installed in accordance with (IAW) the TSIP or EIP.

C2.5.2.2 All circuits and end equipment installed IAW the TSR and TSO by the service date specified in the TSO. Assistance may be requested from the government E&I team, if necessary. Any difficulties will be referred to the RNOSC or network manager, as appropriate.

C2.5.2.3 All equipment is operational as determined by testing with the RNOSC.

C2.5.2.4 All equipment is bar-coded.

C2.5.2.5 All equipment (racks, drawers, patch panels, cables, modems, etc.) is properly labeled.

C2.5.2.6 All technical documentation is on hand, correct, and coordinated with the RNOSC.

C2.5.2.7 Site clean up is accomplished in conjunction with work done at the site. (If installation contractor personnel representing DISA leave the site in need of a clean-up following work at the site, this deficiency will be reported.)

C2.5.3 Upon receipt of a TSR/TSO, the NSC will contact the CCO/CMO and ensure the TSR/TSO is correctly laid out (e.g., routed through Tech Control). If a change is necessary, the NSC will task the CCO/CMO to inform the appropriate TSO-issuing authority. Corrections to the TSR/TSO will be made as far in advance as possible of the circuit installation. The NSC will verify the equipment received or on hand is sufficient for the implementation. The NSC will inform the CCO/CMO if any delays are encountered which would result in a scheduling slip.

C2.5.4. The NSC, in conjunction with commercial vendors or government E&I teams, will assist with:

C2.5.4.1 Identification of space within the cabinets to house circuit equipment.

C2.5.4.2 Circuit installations between the commercial vendor, the

base main distribution frame (MDF), the DISN intermediate distribution frame (IDF), and the node.

C2.5.4.3 Identification of appropriate cross-connect points, circuit wiring pairs, and the DISN-installed cabling required to complete an IST or access circuit order.

C2.5.5 When requested by DISA, RNOSC personnel, or supporting installation contractors, the NSC will provide node site status on equipment and circuits still in the process of being implemented.

C2.6 **Preventive Maintenance Checks**. The NSC will perform a quarterly Preventive Maintenance Check of the DISN node site equipment. These visual checks are designed to alert S/A and DISA personnel of potential problems and will not require the NSC to perform any hands-on maintenance. All deficiencies will be recorded and forwarded to the appropriate RNOSC for that equipment. (Table T2.1 contains the checklist of items that will be inspected/verified quarterly.)

C2.7 **Electronic Mail Capability**. The NSC will obtain electronic mail capability through the supporting service component to effectively perform the functions required. (Electronic mail is used widely to disseminate information to NSCs about ongoing activities, procedural changes, POC changes, etc.)

C2.8 **Node Relocations**. Periodically there is a requirement to relocate communications and automated data processing equipment to accommodate changes and expansions at the local level. Due to the increasing reliance by operational systems on the DISN, any relocation of DISN resources requires the NSC to comply with one or more of the following items.

C2.8.1 Provide advance notice of a proposed DISN relocation to allow sufficient lead time for DISA to plan, schedule, survey, and accomplish the relocation. Notice will be provided by the local command or agency via formal message to DISA D3 with information copy to the GNOSC and all intermediate service telecommunications, engineering, and installation commands. The message will contain, at a minimum, the following information:

C2.8.1.1 Network, node name, and node number.

C2.8.1.2 Node Site Coordinator. (Name, telephone number, and

C2.8.1.5 Date that relocation will be completed.

C2.8.1.6 Reason relocation is required. (Include impact if not accomplished and any other information relevant to the relocation.)

C2.8.1.7 Telecommunications service actions. (Explain, in detail, all circuit actions required.)

C2.8.1.8 Proposed schedule for cutover at the new site.

C2.8.2 An "expedited" process may be required under emergency circumstances. This short lead time relocation request for the deinstallation and storage of the DISN node equipment until reinstallation may be accomplished by formal correspondance. The message or letter will be based on the complexity of the proposed relocation and required TSR and TSO lead times, as established in DISAC 310-130-1, Submission of Telecommunications Service Requests (reference 4.2). For example, a shorter lead time may be possible if all actions (except the actual deinstallation and reinstallation of the DISN-provided node equipment) can be accomplished by the local command or agency and TSRs are required only for record purposes.

C2.8.3 At no time is the site authorized to power down or move DISN equipment without DISA approval. A site survey will be performed and relocations accomplished with DISA, the S/A, and local command participation. The NSC must coordinate with the RNOSC to minimize the impact of the system disruption.

C2.9 **Equipment Monitoring**. NSC personnel will be able, after training or help from the government O&M team and with assistance from the RNOSC, to recognize what is considered to be normal operating conditions for the DISN node equipment. The NSC will report any abnormal conditions to the RNOSC.

C2.10 **Logistical Support**. DISA is responsible for all aspects of node site equipment logistical support. Details of this support are covered in the DISN JILSP, as well as specific equipment JILSPs. Each JILSP shows how maintenance and supply activities are coordinated between the base activities and other interested parties, such as DISA, the RNOSCs, and contractors. As mentioned previously, DISN is a merger of a number of S/A networks. Logistical support will vary somewhat to account for differences in S/A procedures.

C2.10.1 **Technical Assistance**. Technical assistance may be required at a DISN node. The JILSP outlines the procedures which will be followed to initiate a request for technical assistance. The procedures may vary depending on the contractual arrangements in effect at a particular node location. The NSC will coordinate any

requests for node technical assistance through the appropriate RNOSC.

C2.10.2 **Defective Equipment**. Defective parts will be returned within 5 days of the receipt of a new or replacement part. The NSC may be tasked with this duty or may be responsible for ensuring that visiting maintenance personnel effect the return. The replacement part comes with explicit instructions for return of the defective item. The same shipping container used for the replacement part will be used to return the defective one. Failure to return the old part will result in the site incurring the total contract cost of the part. The RNOSC will be contacted if there is any difficulty in complying with this defective parts return policy. (Where specific supplements to this Circular contradict these procedures, follow the maintenance procedures outlined in the supplement.)

C2.10.3 **Spares**. Spare equipment is normally kept and maintained by contractor personnel; however, some nodes which are centrally located, may be used for strategic spares storage. In such cases, these parts will be labeled SPARE and added to the site's inventory. A spare part may be removed from one of the central sites during maintenance of a second node. The NSC will document the removal, notify the RNOSC, and document the arrival of a replacement spare. It will be the duty of the NSC at the second node, where the spare is used, to return (or to ensure the return of) the defective part IAW the return instructions. (Note: Spares are not to be used to provision new or expanded service.)

C2.10.4 **Equipment Accountability**. DISA installs and manages DISN node equipment; the individual sites are accountable for the property located at their sites. The NSC will ensure that the DISN node equipment is properly signed for and added to the installation's property book as required by local regulations. (Refer to chapter C3 for more detailed information.)

Continue to:
CHAPTER 3. END-ITEM ACCOUNTABILITY

Return to:
Basic Circular
Table of Contents
Publication Listing
DISA Home Page

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

C3. **CHAPTER 3. END-ITEM ACCOUNTABILITY**

C3.1 **General.** End-item accountability and its relation to the DISN node site is addressed in this chapter. Areas of discussion include: equipment transfer procedures used by DISA for the DISN, DISN database, and reporting of DISN facility and link data.

C3.2 **Equipment Transfers.** DISN end items entering or leaving the DISN node site will be accounted for on a DD Form 1149: Requisition and Invoice/Shipping Document. (See sample in Figure F3.1.)

C3.2.1 **End-item Installation.** Equipment will be sent to a node site via Federal Express, United Parcel Service (UPS), registered mail, or it may be hand-carried. Regardless of the shipping method, a DD Form 1149 should be included, along with instructions for its completion, and a self-addressed, stamped envelope. The DISN Property Accountable Officer (PAO) (usually the Node Site Coordinator [NSC] or authorized representative) will complete the DD Form 1149 and return the original to the DISA installation contractor within 14 days of transfer. Signature of the PAO or NSC will acknowledge receipt of the end item(s) and obligate the site PAO or NSC to ensure the equipment is protected against damage or loss and is accounted for at all times.

C3.2.2 **End-item Deinstallation.** End items which are deinstalled at the node site will be accounted for on a DD Form 1149. The deinstaller will sign the DD Form 1149 and give one copy to the PAO/NSC. The remaining copies will be retained by the deinstaller for delivery to DISA. Deinstalled end items shall be removed from the node site within 7 working days from the date of the deinstallation. If this removal does not occur, the NSC will contact the area DISA DISN Installation Management Office to report the deficiency.

C3.2.3 **Maintenance Actions.** Some maintenance actions may require equipment transfer; i.e., installation or deinstallation. These actions are handled as explained in subparagraphs C3.2.1 and C3.2.2 (above).

C3.2.4 **Equipment Modification.** Modifications that involve installations or deinstallations will follow the transfer procedures for installation or deinstallation.

C3.2.5 **Unauthorized DISN Items.** End items that are on station and are not in use or scheduled for installation (except for authorized spares IAW C2.10.3) should be considered unauthorized. The appropriate RNOSC should be contacted for disposition instructions. Unauthorized DISN items will normally be returned to DISA using a DD Form 1149.

C3.2.6 **Report of Survey**. When a site receives equipment but later cannot locate the equipment, the site must initiate investigative actions to identify the circumstances or liability associated with the missing parts. Also, when Federal Express, UPS, or registered mail tracking data indicates a package was signed for by site personnel, the receiving unit must initiate a Report of Survey.

C3.3 **DISN Database**. The DISN database contains the end-item information for each equipment site in the DISN. This includes monitoring centers and test beds, in addition to node sites.

C3.3.1 DISA uses bar codes to track DISN end-items. These codes uniquely identify an end-item and provide for entry into the DISN database. Bar codes do not, of themselves, give any information about the end-item, but when the alphanumeric bar code is entered into the DISN data base, stored data which relates to the end-item is made available.

C3.3.2 DISA uses the bar code system described in MIL-STD-1189B. The bar code labels meet the standards in MIL-STD-1189B; however, the way the alphanumeric code is used is different.

C3.4 **Defense Information Infrastructure (DII) Reporting**. Information concerning all operational DOD owned or leased DII transmission media, system traffic switches, and support facilities will be reported to the appropriate monitoring center IAW DISAC 300-85-1, Reporting of DCS Facility and Link Data (reference 4.3). Within the DISN, the internet protocol routers (IPRs), IDNX/ADNX, ATM switches, and Regional Network Operations and Security Centers (RNOSCs), are identified as DII facilities. As DISN assets become operational, they are added to existing facility and link reports. For example, if an IPR is sponsored by a unit which also operates and maintains another DII transmission system, switch, or facility (such as an AUTODIN Switching Center [ASC]), the IPR would be added to the existing report. If the DISN asset is the first DII asset to be sponsored by the unit, DISA will coordinate with the gaining unit to initiate facility and link data reporting. In most cases, the NSC will not be the unit's designated equipment accountant, but as a minimum, the NSC will be prepared to provide the latest DISN inventory for the site or be able to verify and update all DISN assets on the station's Facility and Link Data Report. It is mandatory that a report be submitted on each node site at least every 180 days. (NSCs should refer to DISAC 300-85-1, Reporting of DCS Facility and Link Data [reference 4.3], for exact procedures.)

Continue to:
CHAPTER 4. NODE SITE COORDINATOR TRAINING

Return to:
Basic Circular
Table of Contents
Publication Listing
DISA Home Page

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

C4. CHAPTER 4. NODE SITE COORDINATOR TRAINING

C4.1 **General.** To perform the duties outlined in chapter 2, the NSC may require training. The NSC and alternate NSC will not be the sole personnel responsible for DISN node site equipment. Each node will normally be serviced and maintained through a global DISN maintenance contract. All maintenance will be coordinated with the responsible RNOSC. In many cases, the RNOSC operators can coordinate efforts with other network support personnel to correct problems with minimal onsite assistance.

C4.2 **Training Program**. General network training is provided to assist the NSC in understanding the larger network and how the specific node fits into the larger picture. No attempt is made to train the NSC in repairing the node. Maintenance is the specific responsibility of DISA. Training will provide familiarization with equipment used at nodes (routers, ADNX, IDNX, channel service units [CSUs]/data service units [DSUs], and switches).

C4.3 **Training Related Expenses**. The annual 3-day DISN Data Services training is free; however, the attendee is responsible for travel and per diem.

C4.4 **Training Point of Contact**. DISA D3 is the focal point for DISN Data Services training. Follow-on training is normally done by the S/A or through on-the-job-training (OJT). Additional formal training, at the S/A expense, can be arranged. Contact DISA D3, (DSN) 653-3236 or (703) 735-3236, for details.

Continue to:
Supplement 1

Return to:
Basic Circular
Table of Contents
Publication Listing
DISA Home Page

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

SUPPLEMENT 1. **INTERNET PROTOCOL ROUTER NODE SUITE**

S1.1 **General.** This supplement discusses Internet Protocol Router (IPR) node suite equipment and configurations, IPRs, and communications servers (CSs).

S1.2 **IPR Node Suite Equipment Components.** The IPR is shown in relationship to other components of the IPR node suite in S1. Figure F1. The NSC responsibilities pertain to components inside the box labeled "DISN IPR NODE". However, the NSC may be tasked to maintain other equipment shown that is located within the facility.

S1.2.1 **DISN IPR Node Components.** DISN components include:

S1.2.1.1 Internet Protocol Routers (IPRs).

S1.2.1.2 Communications servers (CSs).

S1.2.1.3 Processor racks.

S1.2.1.4 Encryption racks.

S1.2.1.5 Communications racks.

S1.2.1.6 KG-84A and/or KG-194 encryption devices.

S1.2.1.7 Modems.

S1.2.2 **Additional Equipment.** A variety of other equipment and parts are used in the DISN to interface different network components. This may include line drivers, Sync/Async adapters, interface converters, Synchronous Modem Eliminators (SMEs), local modems, and null modems.

S1.2.3 **IPR Node Equipment Specifications.** S1. Table T1 shows the network specifications for equipment installed in the IPR node suites.

S1.2.4 **Standard Node Suite Configurations.** To ensure uniformity among node sites and eliminate duplication of effort when preparing and installing an IPR node suite, standard configurations were developed. In DISN IPR node suites, equipment racks are used to mount network components. Basic equipment rack configurations have been defined, corresponding to functional requirements of the node. Variations on the basic racks may also exist, depending on site-specific requirements. A sample DISN NIPRNET network configuration is shown in S1. Figure F2.

S1.2.5 **Equipment Rack Contents.** The following is a list of the three types of equipment racks and the network components which are installed in the IPR node suites. Refer to S1. Figure F3 for a

typical SIPRNET configuration and to S1. Figure F4 for a typical NIPRNET configuration.

S1.2.5.1 **Processor Rack**. This rack contains the IPR, CS (where applicable), and associated patch panels. Paragraphs S1.3 and S1.4 discuss the IPR and CS equipment in further detail.

S1.2.5.1.1 The most significant equipment item in the processor cabinet is the IPR. Its configuration is determined by the type of router, the number and type of interface processor cards, and its software operating system. An AGS+ can accommodate up to 32 individual interfaces and will be configured with a CSC3 or CSC4 processor.

S1.2.5.1.2 In most instances a Cisco model 7XXX series IPR will be used. (This includes Cisco 7206's, 7000's, 7505's, 7507's, and 7513's.) These models are similar but offer a higher interface speed which enables the router to exploit high-speed serial technology such as fiber optic digital interfaces.

S1.2.5.1.3 Just below the router is a patch panel. This patch panel, usually an ADC product, can accommodate up to 18 sets of DB-25 modules, wired for the RS-530 physical standard. Each set has three individual patch locations. The upper location in a set is labeled "component." It will normally go to a port on the router. The middle location in a set is marked "modem." The circuit passes through the modem patch appearance and on to the transmission media (modem, channel service unit [CSU]/data service unit [DSU], IDNX, etc.). The common practice is to cable the path such that patch cords are not used except during troubleshooting or to patch around a faulty piece of equipment. The bottom of the three patch locations in a set is used for monitoring purposes and is appropriately marked "monitor."

S1.2.5.1.4 The converter cages shown in the bottom of this cabinet contain the protocol converters. A number of other different types of equipment can be present.

S1.2.5.2 **Encryption Rack**. The DISN security architecture requires certain portions of the router networks to be encrypted. For example, secret IPR circuits which leave the confines of a secure facility must be encrypted. Node control gateways may also be encrypted to preclude unauthorized access. Note also that in some cases encryption gear may not be required. The DISN security requirements may be met without the need to encrypt the signals passing through the IPR node suite. When this is the case, special cables are used to provide the interconnections within the cabinet.

S1.2.5.2.1 The encryption equipment is placed between the secure and

nonsecure portions of the suite. At a DISN SIPRNET IPR node site, the logical flow is from the processor rack, through the encryption device, to the communications cabinet. The encryption device provides the encryption for communications leaving the node. S1. Table T2 and S1. Table T3 contain the various cryptographic device settings for the KG-84A devices used within the DISN networks. The NSC can use these tables to coordinate with the local site cryptographic support personnel for maintenance of the KG-84As.

S1.2.5.2.2 The DISN security architecture requires certain portions of the router networks to be encrypted. For example, secret IPR circuits which leave the confines of a secure facility must be encrypted. Node control gateways may also be encrypted to preclude unauthorized access. Note also that in some cases encryption gear may not be required. The DISN security requirements may be met without the need to encrypt the signals passing through the IPR node suite. When this is the case, special cables are used to provide the interconnections within the cabinet.

S1.2.5.3 **Communications Rack**. Signals which are leaving the DISN node, arriving from a distant node or previous system, are processed by equipment in the communications rack. The communications rack assembly acts as an interface between the facility communications lines and the communications equipment. It provides a single location for mounting modems, multiplexers, and other data communications equipment required at a site. The communications rack is equipped with the following:

S1.2.5.3.1 **Larse Model Access-T 1500 DSU/CSU Chassis**. The Larse model Access-T 1500 DSU/CSU chassis is usually placed in the top of this rack. It holds up to 15 DSU/CSU modules per chassis. Individual DSU modules plugged into the chassis can be used to terminate circuits with data rates in DS0 increments (n x 56 or 64 Kbps) up to a full T-1.

S1.2.5.3.2 **Model MPC-2 Signal Converter**. A model MPC-2 (or equivalent) signal converter is installed in the communications rack. Its function is to convert signals from commercial standards such as V.35 or RS-232 to the DISN standard RS-530.

S1.2.5.3.3 **Codex Model 35xx DSU/CSU**. A Codex model 35XX DSU/CSU cage may be installed. This item is used to house modem modules for low data rate applications. The 35XX series modems are remotely manageable and may be used when the network operations center needs to manage the circuit as well as the node equipment.

S1.2.5.3.4 **Voice Frequency (VF) Patch Panel**. The VF patch panel

supports voice frequency patching. This is not contained in all nodes. There are four VF patch panel modules on two strips in the standard cabinet. Each module includes two 50-pin connectors, one for line connections and one for modem connections. The unit is designed to provide a straight-through connection of all circuits in normal operation. When a patch cord is inserted into this panel, the connection inside the jack is broken, allowing the circuit to be patched to another line. Placing patch cords into the correct line jack allows any incoming line to be patched to any modem line by placing the patch cord into that modem back. Placing a patch cord into the monitor jack allows monitoring of a circuit without breaking the connection.

S1.2.5.3.5 **Radio Jack (RJ)-11C/RJ-45 Breakout Panels**. RJ-11C breakout panels (also known as Mod-Tap Panels) are passive mechanical adapters that convert four 50-pin TELCO jacks into four sets of 12 modular telephone jacks (RJ-11Cs) for ready connection to VF modems. There are four RJ-11C breakout panel modules on two strips on the standard cabinet. VF modem vendors are required to supply a cable from their modem's analog side that mates with the RJ-11C jack. The RJ45 Breakout Panels are replacing the RJ-11C, and are capable of up to a CAT-V signal. There will be two for each node, the first designated for low speed circuits (DDS) and the second for high speed circuits (T1/FT1 and circuits directly connected to the IDNX).

S1.2.5.3.6 **Digital Patch Panel**. The patch panel allows patching of the digital side of each circuit. Using patch cords, a technician is able to spare circuits or modems.

S1.2.5.3.7 **Power Strips**. AC power outlet strips that supply power to components are located in the back on either side of the cabinet.

S1.2.5.3.8 **Rack Dimensions**. IPR node suites have various "footprints" with each rack being 24 inches across the front by 36 inches deep. A clear space of at least 36 inches in front of and behind the cabinets is required for clearance when opening the doors or working. The assembly is 80 inches high. Each cabinet has approximately 72 inches of usable panel height. Free space shown in the typical node is intended for future expansion or modification of the node.

S1.2.6 **DISN Integrated Tactical-Strategic Data Networking (ITSDN) Node**. ITSDN nodes are similar to other DISN nodes with two significant differences: each equipment suite accommodates two nodes, one classified (SIPRNET) and the other unclassified (NIPRNET), and ITSDN nodes implement CISCO 7206 routers. S1. Figure F5 depicts the typical layout. However, NIPRNET and SIPRNET equipment racks will not

normally be installed side-by-side as shown here. The ITSDN processor, encryption, and communication racks are similar to those described previously.

S1.2.7 **Power**. The IPR equipment uses conventional 20 AMP, 120V, 50/60 Hertz (Hz) electrical power. The DISN node suite is part of a large network; therefore, electrical power supplied to the router node equipment should be uninterruptable whenever such power is available. The DISN standard node suite does not include an uninterruptable power supply. The availability of this equipment should be considered a critical factor when choosing the node's physical location. The node equipment will consume up to 3000 watts and produce up to 12,700 BTU of heat load. The NSC should consult site specific documentation during the site survey to obtain exact figures.

S1.2.8 **Standard Node Classifications**. There are two types of standard DISN IPR node suite classifications as follows:

S1.2.8.1 **Unclassified**. Currently, in an unclassified node, only Continental United States (CONUS) to outside CONUS (OCONUS) IPRs are protected by encryption devices. Although some nodes do not have encryption devices, in the future, most DISN network circuits will be KG-protected. The data handled by this type of node is unclassified but sensitive and encrypted for transmission only. These nodes normally consist of one processor rack, one communications rack, and possibly an encryption rack.

S1.2.8.2 **Classified**. A classified node is one in which KG devices are used to encrypt classified data for safe transmission over both interswitch trunks (ISTs) and access lines. The standard classified node configuration consists of one or two encryption racks, one processor rack, and one communications rack.

S1.2.8.2.1 The preferred layout is the side-by-side arrangement. However, due to site-specific requirements, the equipment cabinets may stand apart.

S1.2.8.2.2 The site-specific documentation available at each site should be checked to see what type of node configuration applies to the specific node.

S1.2.9 **Variations of Standard Node Configurations**. For several reasons, an IPR node suite may be different from the basic nodes described above. These reasons and the resulting variations on the basic standard nodes follow. Variations from the standard node suite are the exception and not the norm and require approval from DISA Operations Directorate (D3).

S1.2.9.1 **Extra Equipment**. DISN nodes are modularly designed for ease-of-use and easy modification. One common modification is the addition of a communications rack or encryption rack, called "expansion racks." Adding extra lines or extra pieces of equipment to the IPR node suite may result in the installation of several more equipment racks at the node site.

S1.2.9.2 **Use of More Than One Room**. Site requirements may dictate that DISN racks be installed in different rooms at the node site for the security or convenience of that facility.

S1.2.9.3 **Integration of the Node into an Existing Facility**. Site requirements may dictate that node components be integrated into an already existing facility with space restrictions. In this situation, node equipment components are sometimes mounted in non-DISN equipment racks. To view an exact picture of the equipment contained in the site and the way it is configured, consult available site-specific documentation.

S1.2.10 **Notification Addresses - IP Routers**. All changes to NSC information should be reported to the appropriate addresses below:

S1.2.10.1 **Network Information Center (all regions).**

S1.2.10.1.1 **For NIPRNET** - E-mail: hostmaster@nic.ddn.mil

S1.2.10.1.2 **For SIPRNET** - E-mail: hostmaster@ssc.smil.mil

S1.2.10.2 **Global Network Operations and Security Center (all networks and regions).**

Defense Information Systems Agency
Operations Directorate (D3)
701 S. Courthouse Rd.
Arlington, VA 22204-2199
E-mail: gccsco@ncr.disa.mil
Telephone: 1 (703) 607-4001 or (DSN) 327-4001

S1.2.10.3 **In CONUS (NIPRNET).**

DISN Regional Network Operations and Security Center - Columbus
DISA-WE61
3990 East Broad St, Bldg. 27-7
P.O. Box 1605
Columbus, OH 43216
E-mail: pbaker@crcc.disa.mil
Telephone: 1 (800) 554-DISN (3476), (614) 692-9125, or DSN 850-9125.

S1.2.10.4 **In CONUS (SIPRNET).**

DISN Network Management Operations Center
DISA (D3)
11440 Isaac Newton Square
Reston, VA 22091
E-mail: siprnetm@ncr.disa.mil
Telephone: 1 (703) 607-4010/2/3/4 or (DSN) 327-4010/2/3/4

S1.2.10.5 **In the European Region (NIPRNET and SIPRNET).**

DISN Network Management Operations Center
DISA-Europe (EU21)
UNIT 30403
APO AE 09131
E-mail: eurnprmg@eur.disa.mil or eursprmg@eur.disa.mil
Telephone: (DSN) 430-5817, or
(commercial) 00149-711-680-5817 (outside Germany)
0711-680-5817 (inside Germany)

S1.2.10.6 **In the Pacific Region (NIPRNET and SIPRNET).**

DISN Regional Network Management Operations Center
DISA (PC3) (ROSC)
Bldg 107, Wright Avenue
Wheeler Army Airfield, HI 96854-5120
E-mail: nipr-pac@pac.disa.mil and sipr-pac@pac.disa.smil.mil
Telephone: 1 (808) 656-2777 ext. 105 or (DSN) (315) 456-2777 ext. 105

S1.2.10.7 **In Southwest Asia (NIPRNet and SIPRNet).**

DISN Regional Network Management Operations Center
DISA Central Command Forward
Eskan Village, Villa 70-21
APO AE 09852
E-Mail: swanmoc@esk1.disa.mil
Telephone: DSN (318) 435-7350

S1.3 **Internet Protocol Routers (IPRs).**

S1.3.1 **General.** The IPR is used in most cases as a HUB Router for network connectivity or as a Premise Router (PR). A HUB Router is connected to other HUB Routers and may have Communication Servers (CSs), PRs, and other IPRs attached to it. PRs are stubbed off of a HUB Router and may have subscriber's connections via S/A LANs, hosts, and terminals. The IPR is also used as a gateway to connect the LAN/WAN to other networks.

S1.3.1.1 The PR is operated and managed as a base communications or automated data processing asset. The symbol labeled DISN Router refers to a DISN asset. It is loaded in the DISN database and is

owned and managed by DISA. The router, which may be referred to by other terms such as a hub or IPR, is the primary equipment component of the DISN router networks.

S1.3.1.2 Subscribers may desire that DISA manage its PRs. If so, agreements between DISA and the subscriber will be coordinated and documented.

S1.3.1.3 Routers receive data in the form of datagrams; the IPR determines a datagrams destination from the header within that datagram.

S1.3.1.4 A subscriber sends data to the router via an access or tail circuit. Data received from other routers is returned to the subscriber through the same path. The bidirectional data flow is referred to as full duplex (fdx), which is capable of sending and receiving data at the same time.

S1.3.1.5 Data rates on the subscriber side are dependent on the type of connection. Typical routers can terminate a variety of serial protocols as well as ethernet and other LAN protocols. The data rate between routers, that is between the premise router and IPR (or hub), will depend on subscriber requirements and the method of connection.

S1.3.1.6 The IPR needs to be configured, or programmed, before it can be operated. Configuration consists of providing operating parameters and instructions to each of the interface ports. Configuration may be accomplished by connecting a terminal to the router and entering the configuration commands through the terminal. Configuration data may also be downloaded from another router, however, the configuration will normally be done prior to shipment by the onsite installer or remotely by the Regional Operations and Security Center (ROSC). The routers are capable of storing more than one configuration and the storage is nonvolatile so that it will not be erased at power failure. A router's configuration cannot be changed without knowing two passwords. The ROSCs will normally be the only entity having access to both passwords.

S1.3.2 **DISN Router Models**. There are several types of routers used on the DISN networks. These consist of Cisco 7206, 7000, 7505, 7507, and 7513 routers. Most of our 7000 routers have been upgraded to the RSP7000 combined route/switch processor. This provides the Cisco 7000 routers with functionality comparable to the 75XX series routers that employ the RISC processor based Route/Switch Processor (RSP) cards. The Cisco model AGS+ router has been replaced as it is no longer supportable. More information on these routers can be obtained from Cisco at http://www.cisco.com.

S1.3.2.1 **Cisco Routers**. The Cisco routers run the proprietary Cisco Internetwork Operating System (Cisco IOS). The online reconfiguration utility allows software configuration changes to occur without rebooting and interrupting current network processes and services.

S1.3.2.2 **Network Connectivity**. The Cisco routers support a variety of protocols used within the DISN subscriber community. Anywhere from 5 to 13 card slots (depending on the router) are provided for interface processors and Route/Switch processors, which are filled from slot 0 to slot 12. Slots not filled with interface processors are filled with blank card carriers. The following are some of the interface processor types available:

S1.3.2.2.1 Token Ring Interface Processor (TRIP) cards provide two or four high-speed (4 mbps or 16 mbps) Token Ring ports. Each port requires a media attachment unit (MAU) to connect the DB-9 connector to external Token Ring networks.

S1.3.2.2.2 Ethernet Interface Processor (EIP) cards provide two, four, or six high-speed (10 mbps) Ethernet ports. Each port requires an 802.3 MAU (or transceiver).

S1.3.2.2.3 Fiber Distributed Data Interface (FDDI) processor cards provide two high-speed (100 mbps) FDDI port.

S1.3.2.2.4 High-Speed Serial Interface Processor (HSSIP) cards provide one HSSI up to 52 mbps) port. The HSSIP port can be configured to support ATM, Switched Multimegabit Data Services (SMDS), Frame Relay (FR), or private lines; all speeds up to DS3 (44.736 mbps) or E3 (34 mbps).

S1.3.2.2.5 Fast Serial Interface Processor cards provide four or eight high speed serial ports (up to 4 mbps).

S1.3.2.2.6 Asynchronous Transfer Mode (ATM) Interface Processor cards provide an ATM interface.

S1.3.2.3 **Hardware Description**. S1. Figure F6 shows a front view of the Cisco model 7000 Router. The unit consists of an air blower for cooling, a Route Processor (RP), a Switch Processor (SP) or Silicon Switch Processor, along with the network interfaces (described above), which provide connectivity between the high-speed Cisco Extended Bus (CxBus) and the external network. S1. Figure F7 shows a rear view of the Cisco 7000 Router.

S1.3.2.3.1 **Route Processor (RP)**. The RP contains a 25 MHZ 68040 central processing unit (CPU). The RP has a 16 MB dynamic random-access memory (DRAM), 2 MB read-only memory (ROM), 4 MB flash erasable programmable ROM (EPROM), and 128 KB NVRAM. The RP uses a

battery backup and has a real-time calendar clock. The RP has an EIA/TIA-232 Data Communication Equipment (DCE) Console port and its auxiliary port is an EIA/TIA-232 Data Terminal Equipment (DTE) connection.

S1.3.2.3.2 **Switch Processor (SP)**. The SP controls communication between the CxBus interface processors and the system processor. (The Silicon Switch Processor is the other SP model available.)

S1.3.2.3.3 **Power Supply**. Either a single or dual detached power supply is also included. The power supply contains its own internal fan for cooling and is self-monitoring for temperature and voltage. In abnormal environmental conditions, the unit will shutdown.

S1.4 **Communications Servers (CS).**

S1.4.1 **Terminal Service.** The internet protocol (IP) networks provide Dial-in Data Service, which allows access to NIPRNET and SIPRNET via dial in asynchronous lines. The access to the data networks is provided by a CS. Service is provided by either local/DSN P.O.T.S. lines or 800 toll free lines. Terminal and hosts devices are supported. The host is a PC type device that supports the Transmission Control Protocol/Internet Protocol (TCP/IP) suite and uses Serial Line Internet Protocol (SLIP) or the Point to Point Protocol (PPP) to access the CS. Authentication and access control are provided by using a fixed User ID and access code which will be supplied to each user and will be checked each time a user attempts to access the network (i.e., NIPRNET or SIPRNET).

S1.4.2 **Cisco Model 2511 Communications Server**. The Cisco 2511 CS provides DISN user connectivity to the network through its 16 asynchronous ports, 2 serial ports, and 1 IEEE 802.3 Ethernet interface. CSs will only be installed at a limited number of node sites.

S1.4.2.1 **Protocols**. The CS incorporates PPP, compressed PPP, serial line SLIP, compressed SLIP, MacIP, rlogin, telnet, tn3270, and xremote protocols. The protocol to be used is determined by the user after each successful login.

S1.4.2.2 **Network Connectivity**. User connectivity is provided via several types modems connected to the CS, depending upon the location and network. All the modems are capable of error correction and compression. This permits the throughput to be increased by a factor of 2 to 4 depending on the specific modem used on both ends. However the amount of increase depends upon the compressibility of the data being sent and will vary. For example, it is rare to see a 28.8 kbps modem connect at that rate. In practice, one should expect to attain

a throughput of 57.6 kbps, the CS DTE rate, given a 28.8 kbps modem and 4 to 1 compression. The NIPRNET will use 28.8 kbps modems in CONUS, 14.4 kbps and 28.8 kbps modems in Europe, and 9.6 kbps modems in Pacific. On the SIPRNET AT&T 1910's, which will connect to the CS, the maximum line speed they will negotiate is 14.4 kbps. The STU-III will permit a 19.2 kbps DTE rate to the CS. All existing Type 1 STU-III devices will interoperate with the model 1910.

S1.4.2.3 **Hardware Description**. The Cisco model 2511 contains a 2 MB standard DRAM and a minimum of 4 MB flash single in-line memory module. The CPU is a 20 MHz 68030 processor. The unit has a 40 watt power supply, power cord, and RJ-45-to-DB-25 adapter. S1. Figure F8 shows both the front and rear view of the Cisco 2511 CS.

S1.4.2.4 **Configuration**. A standard configuration has been developed for the CS. This configuration is loaded into the CS prior to shipment to the node site.

S1.4.2.5 **CS Monitoring and Troubleshooting**. The DISN CSs are maintained by the theater RNOSC. On occasion, RNOSC personnel may contact the NSC to request assistance with a CS problem.

Continue to: Supplement 2

Return to:
Basic Circular
Table of Contents
Publication Listing
DISA Home Page

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

SUPPLEMENT 2. **INTEGRATED DIGITAL NETWORK EXCHANGE**

S2.1 **General.** The Defense Information System Network (DISN) is the long haul communications for the Defense Information Infrastructure (DII). A major subset of the DISN is the DISN Multiplex Network which provides 1.544 Mbps or lower circuit and frame relay networking services using Integrated Digital Network Exchange (IDNX) technology.

S2.1.1 A number of Service/Agency (S/A) networks have been merged to form the DISN multiplexer layer. Equipment manufactured by Network Equipment Technologies, Inc. is used at DISN multiplex node sites. Other equipment, e.g. modems, channel service units (CSUs), data service units (DSUs), etc., may also be used to support the network and, therefore, populate the DISN node site equipment rack(s). IDNX equipment is also referred to by the terms "smart mux" and "intelligent mux." A smart/intelligent mux (contraction of multiplexer) is one which can reroute traffic to minimize disruptions caused by circuit outages.

S2.1.2 A DISN node represents a concentration point where information from diverse sources is combined electronically to form a group or aggregate of groups. The cost to transport the group can be lower than it would be to transport each portion individually. Advances in digitization techniques have made it possible to convert almost any information to digital form. Voice, video, and computer data, once digitized, can be combined at the DISN node. The IDNX performs the combining process.

S2.1.3 A subscriber sends data (or other digitized information) to a destination IDNX node, or to an Analog/Digital Network Exchange (ADNX), a channel bank device, via a "tail" circuit. Data received from the distant node is returned to the subscriber through the same tail circuit.

S2.1.3.1 The bidirectional data flow is referred to as full duplex communications; the tail is capable of sending and receiving at the same time.

S2.1.3.2 Information on the subscriber side can be transferred at various rates. The ADNX's aggregate signal is a higher data rate, normally 1.544 Mbps. The aggregate signal is connected to the carrier's transmission media, e.g. a transmission facility, satellite, microwave radio, etc. via a CSU. The ADNX can multiplex a large number of subscriber channels for each aggregate. It can terminate more than one high rate transmission line, can sense transmission media failure, and alternatively route (altroute) circuits to the surviving media.

S2.1.4 ADNX multiplexers route information from the subscriber port on the local multiplexer to a corresponding port on a distant end multiplexer. The path between nodes and through the network is allocated by the network managers at the Regional Network and Operations Security Centers (RNOSCs). A given path will be altered during the process of network optimization during normal operations, via dynamic alternate pathing automatically determined by the ADNX if network congestion is encountered, or if the transmission media fails, via a Telecommunications Service Priority.

S2.1.5 A subscriber connection through the IDNX network is mapped from a card and port on the originating node to a card and port on the destination node. The customer need not be concerned with the routing through the network. That routing will be determined by the RNOSC network engineers and will be transparent to the customer. Some subscriber connections will be via an interswitch trunk. Such a trunk will be shared by many customers, even though it is considered to be a single subscriber line. Other connections will be individual circuits which are dedicated to the service of a single customer.

S2.1.6 DISN IDNX network management is accomplished by personnel at the RNOSCs. These centers, also referred to as network management centers (NMCs), are staffed around the clock and report to the DISA Global Network Operations and Security Center. Controllers at the RNOSCs will require assistance at the node locations for some troubleshooting and maintenance actions. The NSCs will usually coordinate such actions.

S2.2 **Training**.

S2.2.1 The DISA DISN Bandwidth Branch, a subelement of DISA D3, is the focal point for DISN IDNX NSC training. Each node site location is initially allocated two IDNX training slots, for the primary NSC and the alternate. Contact DISA HQ, D311, (DSN) 653-3298 or (703) 735-3298 for details.

S2.2.2 DISA funded IDNX training courses are offered at the Naval Telecommunications Training Center at Corry Station, Pensacola, Florida. Call DSN 653-3298 or commercial (703) 735-3298 to schedule training and obtain related information. Expenses for tuition and fees for the initial training are funded by DISA. Travel and per diem expenses are not funded by DISA. These courses cover operation and first-echelon maintenance, that is basic troubleshooting techniques and card level removal/replacement, for the DISN-supplied node equipment components. DISN IDNX training is also given at the Network Equipment Technologies factory in Redwood City, California, and the company's training facility in Ashburn, Virginia; however, this

training will be funded by the using organization.

S2.2.3 DISA-sponsored training will include the following equipment categories: IDNX Digital Multiplexer, ADNX Channel Bank, CSU/DSU, Modem, and SPX/50.

S2.2.3.1 Some equipment needed for successful and reliable node performance, e.g. uninterruptible power systems, may not be supplied as a part of the DISN node. Introductory training regarding such support equipment types is included in the DISN courses. Training on specific make/model support equipment is outside the scope of the DISN training. NSCs can query NMC personnel for guidance when working with this equipment.

S2.2.3.2 No specific prerequisite school or training is required; however, trainees are expected to have a basic understanding of the fundamentals of transmission systems, multiplexing, and technical control. The formal training will provide individuals with hands-on training in component identification, assembly and disassembly of the IDNX equipment, and basic troubleshooting techniques. In most cases, NSCs are expected to provide assistance to contract repair personnel. In those emergency cases where contract personnel are not available, the NSC will be in contact with highly qualified NM personnel during troubleshooting and repair procedures. In addition, NSCs may be contacted by DISA engineering personnel for specific information regarding new requirements. In some cases, NSCs may be asked to assist with installation and modification tasks. The DISN IDNX node will be equipped with a terminal which is used to view the network. NSC personnel will learn about this capability during training. Use of this terminal greatly simplifies the troubleshooting process.

S2.2.3.3 NSC training does not cover site specific installation details. The number and type of interconnections to the IDNX node is different at each site. There are requirements in effect to ensure that site-specific drawings and related documentation are on hand to adequately describe each node. Site detail may be found in the Joint Integrated Logistics Support Plan (JILSP), the site test plan and the "as-built" drawing package. The NSC will be required to keep, maintain, and update this documentation. The NSC will be able to interpret this documentation so it can be referenced, as required. With help from the RNOSC and installation and maintenance personnel, the NSC will be able to determine if the documentation on hand is complete and accurate. Each NSC is advised to check the site documentation package at the earliest opportunity and work with the NMC to update it when necessary.

S2.3 **DISN Node Site**.

S2.3.1 **Physical Site**. A DISN IDNX node site is the physical location of the DISN backbone equipment. Normally, this consists of one or more IDNX nodes (IDNX/20 or 90), ADNX, a statistical multiplexer (SPX/50), an echo canceler, a modem, enclosure cabinet(s) and, in some cases, SONET Transmission Managers and/or encryption cabinet(s).

S2.3.2 **Node Suites**. Node site equipment components and equipment configuration in standard nodes is detailed as follows:

S2.3.2.1 **Configuration**. An IDNX site configuration consists of the multiplexer itself along with ancillary equipment used to either interface or manage it. The IDNX node can be installed in configurations ranging from a single-shelf version to an eight-shelf version. The size and complexity of the node determines which configuration is used. The eight-shelf configuration will utilize at least three cabinets and has roughly twice the capacity of the four-shelf version, which utilizes at least two cabinets.

S2.3.2.2 **Node Equipment Overview**. There are usually two or three cabinets (sometimes referred to as racks) designated, from left to right when facing the cabinets, as IDNX 001, IDNX 002 when used, and ancillary equipment cabinet (AEC). Some eight-shelf IDNXs can have as many as five or more cabinets. The IDNX itself is housed in the left (and center) cabinet(s). The AEC cabinet houses equipment used to interface and support the IDNX multiplexer.

S2.3.2.2.1 **Patch Panels.** Patch panels may be installed, but not in all locations. Some sites will have DSX-1, VF, and digital patch panels. As-built drawings for each site will depict where these panels are and what breakouts can be made.

S2.3.2.2.2 **IDNX 001**. The upper and-lower portions of this cabinet can house up to eight power supplies. These power supplies are labeled OA, OB, 1A, 1B, 2A, 2B, 3A and 3B. Auxiliary fan units may be housed in the top and middle sections of the cabinet. These fans ensure sufficient cooling to the IDNX shelves mounted in the cabinet. Two IDNX shelves are mounted above the patch panel in the center of the cabinet and two shelves are located below it. The exact complement of modules used will vary from node to node. Note that in each shelf the 16 module slots are numbered sequentially from top to bottom and from left to right. In the upper shelf you will find slots 0 through 15; slots 16 through 31 are in the next shelf below. The two shelves below the jackfield panel contain slots 32 through 47 and 48 through 63 respectively.

S2.3.2.2.3 **IDNX 002**. This cabinet, when used in a typical eight-shelf application, is identical to IDNX 001 except that the power supplies are annotated 4A, 4B, SA, SB, 6A, 6B, 7A, and 7B. The

shelf numbering scheme remains sequential such that the slots in IDNX 002 start at 64 at the upper left and go through 127 at the lower right. The modules that plug into IDNX 002 slots are in the same relative positions as those in IDNX 001.

S2.3.2.2.4 **Ancillary Equipment Cabinet 003**.

S2.3.2.2.4.1 The top portion of this cabinet is reserved for an ADNX multiplexer. The ADNX is the primary mechanism used to connect voice and analog data circuits to the network; it is also used to extend data circuits. The cabinet is used within DISN for a variety of purposes. For example, it may be used where the number of circuits provisioned does not justify an IDNX. It also may be used to extend a subscriber's circuit to an IDNX located in another building in the same geographical area. Similarly, it can also be used to extend the subscriber's circuit to a distant IDNX location when the two are in the same building. Using the ADNX offers two advantages. First, it saves on subscriber-owned cable pairs; second, it represents an equipment component which can be monitored and managed by the RNOSC, thus simplifying on-base troubleshooting. This simplification helps to speed up repairs.

S2.3.2.2.4.2 Echo canceler equipment is located just below the ADNX space. This equipment is used to minimize or eliminate the effects of echoes on long distance transmissions.

S2.3.2.2.4.3 A Larse model TNDS CSU nest is next. This equipment is used to provide an interface between IDNX trunk modules and the circuit vendor's T-1 lines and can also be used between ADNXs. Up to 15 individual CSUs can be placed in this nest. The right-most slot in this nest is used for the model DCM module. The DCM is used to monitor the various CSUs installed in the nest.

S2.3.2.2.4.4 The TTI alarm panel is normally used only at locations which include a global positioning system (GPS) receiver. The first nine lights on the alarm panel are associated with the GPS receiver. This panel, when installed, is normally monitored by the RNOSC.

S2.3.2.2.4.5 A Lorain power supply is also present. This power supply is used in conjunction with the echo cancelers described above. At some locations the echo canceler will be powered by the ADNX.

S2.3.2.2.4.6 A Codex 3500 modem nest may be installed. The purpose of these modems is to extend and/or interface a subscriber's narrow band analog data circuit to the DISN IDNX node.

S2.3.2.2.4.7 A dial-up modem is installed near the bottom of the

cabinet. In the event that all the circuits connecting the node to the IDNX network are down, the node will be isolated. A separate telephone line is connected to the node through the modem. This modem may be accessed by dialing its telephone number, assuming that the password is known. Once the node is accessed, it is possible to begin troubleshooting. This method represents the only way to gain remote access to an otherwise isolated node. This access is available only to NET service personnel and to the RNOSC.

S2.3.2.2.5 **SPX/50**. This equipment provides the means by which the RNOSC communicates with the node and its ancillary equipment. As mentioned above, it can be accessed via a dial-up modem. Normally that access is not required. Instead, the SPX/50 system sets aside 16 KHz of inter node bandwidth specifically for network operation and management. Operations personnel can connect their terminals, through the SPX/50, directly into any node and into ancillary items such as ADNXs, CSUs, E/C, etc. With the proper authentication and passwords, the operators are able to monitor the status of the equipment and to reconfigure it if necessary. Circuit configuration and reconfiguration is normally restricted by password to the RNOSC. The node ancillary equipment can also initiate communications via the SPX-50. This mode allows node equipment to alert the NMC when alarm conditions occur. As mentioned above, some of the ancillary equipment is also able to generate alarm information. The SPX-50 is a statistical mux which uses a separate channel for each connected equipment item. The channelization is necessary to make sure that equipment alarms are kept separate from one another.

S2.3.2.2.6 **Dimensions**. Each node will differ somewhat from every other node. The difference will typically be in the number and type of circuits and trunks terminated. This difference in circuit requirements will, in turn, affect the exact type of modules used on the IDNX and will also often require the use of additional modems and CSU/DSU equipment.

S2.3.2.2.7 **Power**.

S2.3.2.2.7.1 The IDNX equipment uses either 48 VDC or conventional 12OV, 60 Hz electrical power. The DISA node is part of a large network; therefore, electrical power supplied to the IDNX node equipment should be uninterruptible whenever such power is available. The DISA standard node does not include an uninterruptible power source (UPS); therefore, UPS availability should be considered a critical factor when choosing the node's physical location.

S2.3.2.2.7.2 The IDNX will require from 400 to 3,000 watts and will produce from 1,600 to 12,700 BTU per hour. The variation in power

required and heat produced is because of the differences in equipment actually used at various nodes. Exact figures for electrical power consumption and heat production will be part of the documentation provided during the node site survey. These figures can be expected to change somewhat if the node configuration is changed.

S2.3.2.2.8 **Node Relocation**. DISN IDNX node equipment is physically located in a specific site. Subscriber tails and communications circuits to the node are provisioned to the site. Details regarding the node location and circuit details are documented in several management databases. The normal RFS/TSR/TSO process detailed in DISAC 310-130-1, Submission of Telecommunications Service Requests, will be used prior to any move of DISN nodes. Therefore, the NSC will inform the RNOSC within his/her theater whenever his/her base, camp, post, or station initiates plans to close a building or site, move an operation, or otherwise make changes that will affect the DISN node location. This process will ensure that all appropriate databases are updated at the time of the move. Note that advance planning is required to make certain all equipment and circuits are moved simultaneously. As a general rule, DISA should be notified at least 90 days in advance of the planned moving date.

S2.3.2.2.9 **Additions to DISN Node Equipment**. The DISN IDNX node may include other equipment which is not shown with the standard two or three cabinet configurations. Such equipment may be included for a variety of reasons such as the ones described below. It should be noted that the RNOSC can monitor the status, and in some cases correct deficiencies, of DISN standard equipment. Normally the RNOSCs responsibilities will be to the DISN node only; however, the RNOSC is available to assist in troubleshooting all the way to the user if requested. The NSC can also view his node as well as other nodes and equipment. This view is accomplished through a local terminal connected to the SPX/50.

S2.3.2.2.9.1 **Multiple ADNXs.** S2.1.3.2 describes the use of ADNX multiplexer equipment. In some cases, the DISN node may have several subscriber groups located at different sites in the area served by the node. More than one ADNX may be used to terminate these connections.

S2.3.2.2.9.2 **Modems and DSUs.** Modem or DSU equipment may be required to meet the digital specifications of the DISN interface or to condition the circuit for a long run between the subscriber and the node. This equipment can be managed and maintained as part of the IDNX node. In some cases, for example, at an AUTODIN Switching Center (ASC), the RNOSC can manage the subscriber's modem but it may be more beneficial for the ASC to maintain it. The ASC is manned around the clock and can provide faster response.

S2.3.3 **Logistical Support**.

S2.3.3.1 There are two levels of maintenance under the JILSP. They are organizational and depot. NSCs will act as the coordinator for all organizational maintenance activities. Briefly summarized, these activities are defined in the JILSP as built-in-test assisted operational checks, troubleshooting, fault isolation, diagnostics, preventive maintenance, scheduled and unscheduled maintenance, and removing or replacing line replaceable units. Onsite work will be performed by government personnel, contract personnel, or a combination of both.

S2.3.3.2 **Notification Addresses - IDNX**. The RNOSC will be kept informed of changes in NSC assignment or any other pertinent NSC information (i.e., name, address, phone number, etc.) This may be accomplished by a letter to:

S2.3.3.2.1 **Continental United States.**

DISN Services Center
604 Tyler Street, Bldg. 3189
Scott AFB, IL 62225-5421
Telephone DSN 779-8800
Commercial (618) 229-8800

Scott Regional Network Operations and Security Center
604 Tyler Street, Bldg 3189
Scott AFB, IL 62225-5421
Telephone DSN 779-9000
Commercial (618) 229-9000

Whenever RNOSC-Scott contingency operations are initiated, the NSC will notify the DISN Regional Network Operations and Security Center - Columbus.

Columbus Regional Network Operations and Security Center (WE61)
3990 East Broad St, Bldg. 27-7
P.O. Box 1605
Columbus, OH 43216
Telephone: Commercial (800) 554-DISN (3476), (614) 692-4790, or DSN 850-4790.

S2.3.3.2.2 **DISA Europe and Southwest Asia.**

DISA-EUR
ATTN: EU71
UNIT 30403, Box 204
APO AE 09131

DSN (314) 430-5244 (EUR RNOSC)
DSN FAX (314) 430-8476/5175 (EUR RNOSC)
Commercial 011-49-711-680-extention (EUR RNOSC)

S2.3.3.2.3 **DISA Pacific.**

Chief, Regional Network Operations and Security Center
DISA Pacific
Bldg 107
Wheeler Army Airfield, HI 96854
DSN 315-456-2777
Commercial (808) 656-2777
System Administrator for escalation ext 2828

Continue to: Supplement 3

Return to:
Basic Circular
Table of Contents
Publication Listing
DISA Home Page

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SUPPLEMENT 3. **ASYNCHRONOUS TRANSFER MODE (ATM) NODES**

S3.1 **General.** Asynchronous Transfer Mode (ATM) switching technology is relatively new to the DISN architecture. ATM switches are commercial off-the-shelf equipment which utilize cell protocol to transmit voice, video, and data.

S3.1.1 Traffic traversing the ATM network consists of ATM customers directly connected to an ATM switch, as well as traffic from the IP Router networks.

S3.1.2 The integration of ATM technology is still in its early stage. The current long-range vision includes the deployment of mobile ATM-based assemblies, as well as a growing architecture of fixed ATM switches.

S3.2 **Node Suite Equipment Components**.

S3.2.1 **Unclassified ATM.** The unclassified ATM hardware configuration consists of an ASX-200BX and requires one standard rack.

S3.2.2 **Secret ATM.** The classified ATM hardware configuration consists of an ASX-200BX, one RED SLI1500 box, one Black SLI1500 box, and either one or two KG-194s depending upon how many locations to which the S-ATM node is connected. The S-ATM requires two standard racks.

S3.2.3 **Power Hub.** A power hub will also be included in the unclassified or classified ATM hardware configuration if there is a NIPRNET or SIPRNET router customer who wishes to be connected to the ATM Wide Area Network. The power hub will make the translations from IP Router Protocol to ATM cells.

S3.2.4 **Individual Components**.

S3.2.4.1 **FORE ASX 200-BX**. The FORE ASX 200-BX is a self-contained ATM switch which provides an Ethernet connection for network management access. Its hardware consists of a single switch board with an i960 Switch Control Processor, network modules, redundant power supplies, and fans. These components function together to provide ATM switching capabilities, as well as distributed connection setup and management. The ASX 200-BX provides 2.5Gbps nonblocking switching capacity. The switch provides up to 4 ports of connectivity, each running at speeds up to 622 Mbps; or up to 16 ports, each running at speeds up to 155 Mbps; or up to 24 ports, each running up to 100 Mbps.

S3.2.4.2 **FORE ASX 1000.** The FORE ASX 1000-BX is a self-contained ATM switch that provides an Ethernet connection for network management

access. Its hardware consists of up to four switch boards, each with an i960 Switch Control Processor; network modules; redundant power supplies; Common Equipment Card; and removable fan tray. These components function together to provide ATM switching capabilities, as well as distributed connection setup and management. The ASX 1000 provides 10 Gbps of switching capacity for up to 16 ports of connectivity, each running at speeds up to 622 Mbps; or up to 64 ports, each running at speeds up to 155 Mbps; or up to 96 ports, each running at speeds up to 100 Mbps.

S3.2.4.3 **CISCO Lightstream 2020.** The CISCO Lightstream 2020 is a high performance ATM switch designed for campus and enterprise backbones, as well as public network deployment. The switch performs 2-Gbps cell-switching.

S3.2.4.4 **FORE LAX 20.** The FORE LAX-20 is an internetworking device designed to provide conventional LANs access to the ATM internetwork. It is designed to connect Ethernet, Token Ring, and FDDI LANs to Forerunner ATM networks. It is also a multiport, multiprotocol internetworking switch that combines the advantages of a high-performance LAN switch with a full-featured ATM interface which is capable of carrying LAN traffic. Its Dual i960 processors, high-performance shared memory architecture supports a 1.6Gbps backplane.

S3.2.4.5 **FORE Power Hub.** The Fore Power Hub is a multilayer backbone switch that supports a multiprotocol LAN switch capable of providing Ethernet, Fast Ethernet, FDDI, and ATM. It supports full-featured Layer 2 and Layer 3 LAN switching and multilayer Virtual LANs.

S3.2.4.6 **Bay Network Wellfleet Link Node (LN) Router (used for SIPRNET gateway).** The Wellfleet LN Router is a cost-effective means of providing work group access and a high performance network hub. It supports a large variety of network protocols including Appletalk, ATM, BGP, BGP3, DECnet IV, DLSw, PPP, SNMP, SPAN, SR, TENET, TFTP, FTP, VINES, X.25, Xmodem and XNS.

S3.2.4.7 **KG-194/KG-95.** The KG-194 is a trunk encryption device used to bulk encrypt data streams up to 15 Mbps in a point-to-point connection. The KG-95 is also a trunk encryption device used to bulk encrypt data streams up to 50 Mbps in a point-to-point connection.

S3.2.4.8 **Interim Fastlane (Sensitive Compartmented Information sites only).** Interim Fastlane is an information security system designed to provide secure encryption and transfer of ATM cells over established point-to-point connections through the ATM Wide Area Network. It uses existing crypto in the KG95-1 and operates at speeds up to 34 Mbps.

S3.3 **Node Suite Configuration**. Please refer to paragraph S3.2 for unclassified and classified ATM node configuration. Also see S3. Figure F1 for an illustration of the unclassified ATM suite; S3. Figure F2 for the single rack classified ATM suite; S3. Figure F3 for the double rack classified ATM suite; and S3. Figure F4 for additional equipment.

S3.4 **ATM Network Operations Center (NOC)**. Network problems are reported to the NOC for resolution. All Node Site Coordinator assignments or changes should be reported to the NOC. The ATM NOC contact information for both unclassified ATM and classified ATM locations, is provided below:

10701 Parkridge Blvd. (Room 1351)
Reston, Virginia 20191

Unclassified and classified ATM Phone numbers:

Comm:(703) 735-3258/8351/3570
DSN 653-3258/8351/3570

Return to:

Basic Circular
Table of Contents
Publication Listing
DISA Home Page

MSG E. Taylor, taylor2e@ncr.disa.mil - Last revision: 05 October 1999

SHIPPING CONTAINER TALLY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Figure F3.1 DD Form 1149-Requisition and Invoice/Shipping Document

REQUISITION AND INVOICE / SHIPPING DOCUMENT

Form Approved
OMB No. 0704-0246
Expires Dec 13, 1996

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO EITHER OF THESE ADDRESSES, RETURN COMPLETED FORM TO THE ADDRESS IN ITEM 2

. FROM: *(Include ZIP Code)*	SHEET NO.	NO. OF SHEETS	5. REQUISITION DATE	6. REQUISITION NUMBER
	7. DATE MATERIAL REQUIRED *(YYMMDD)*			8. PRIORITY
. TO: *(Include ZIP Code)*	9. AUTHORITY OR PURPOSE			
	10. SIGNATURE			11a. VOUCHER NUMBER & DATE *(YYMMDD)*
. SHIP TO - MARK FOR	12. DATE SHIPPED *(YYMMDD)*			b.
	13. MODE OF SHIPMENT			14. BILL OF LADING NUMBER
	15. AIR MOVEMENT DESIGNATOR OR PORT REFERENCE NO.			

. APPROPRIATIONS SYMBOL AND SUBHEAD	OBJECT CLASS	EXPENDITURE ACCOUNT (From)	EXPENDITURE ACCOUNT (To)	CHARGEABLE ACTIVITY	BUREAU CONTROL ACTIVITY NO.	BUREAU CONTROL NO.	AMOUNT

ITEM NO. (a)	FEDERAL STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIEL AND / OR SERVICES (b)	UNIT OF ISSUE (c)	QUANTITY REQUESTED (d)	SUPPLY ACTION (e)	TYPE CONTAINER (f)	CONTAINER NOS. (g)	UNIT PRICE (h)	TOTAL COST (i)

16. TRANSPORTATION VIA MATS OR MSTS CHARGEABLE TO

17. SPECIAL HANDLING

18. RECEIPT OF SHIPMENT	ISSUED BY	TOTAL CONTAINERS	TYPE CONTAINER	DESCRIPTION	TOTAL WEIGHT	TOTAL CUBE
	CHECKED BY					
	PACKED BY			TOTAL		

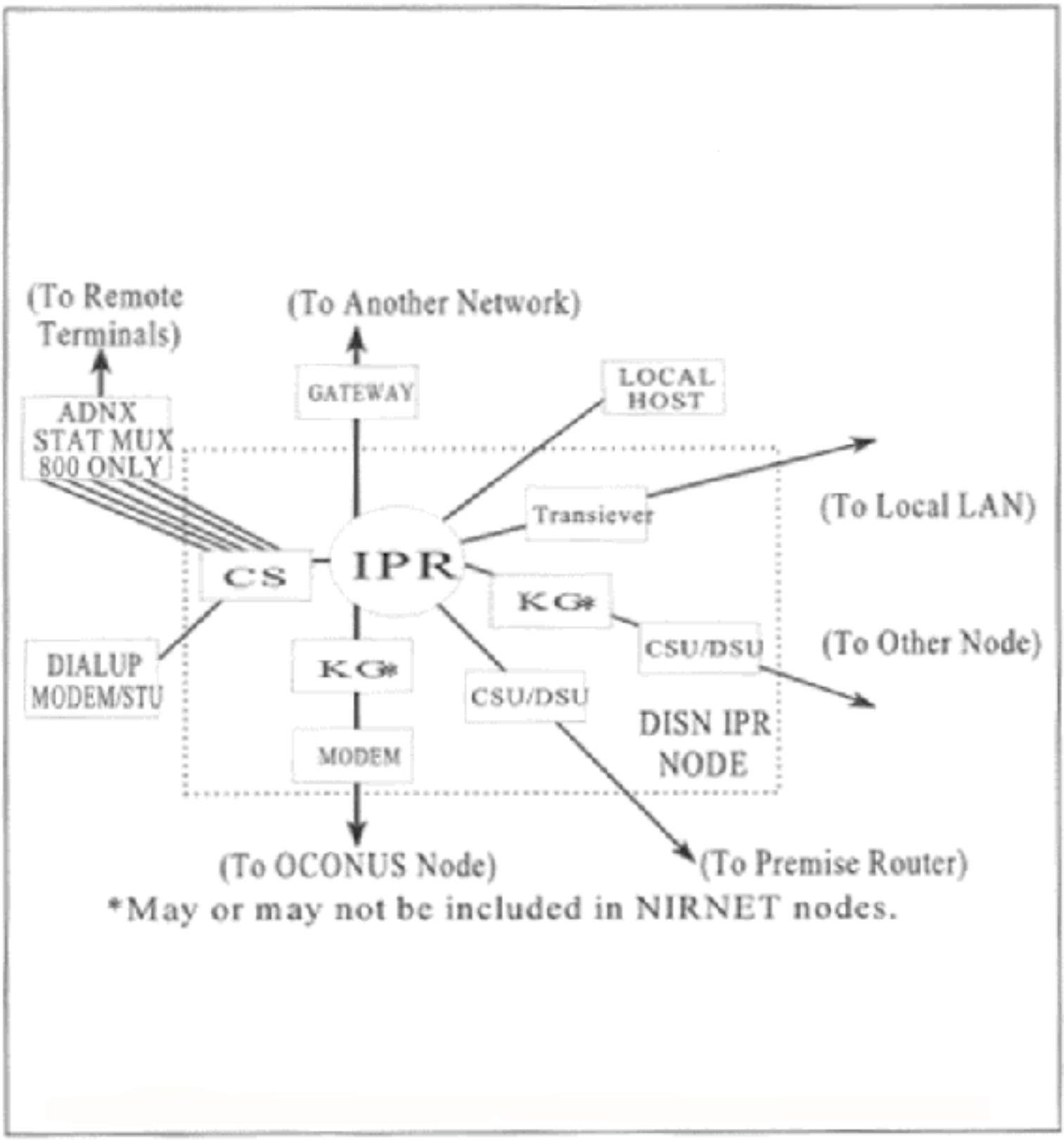
19. RECEIPT OF MATERIEL				
	CONTAINERS RECEIVED EXCEPT AS NOTED	DATE *(YYMMDD)*	BY	SHEET TOTAL
	QUANTITIES RECEIVED EXCEPT AS NOTED	DATE *(YYMMDD)*	BY	GRAND TOTAL
	POSTED	DATE *(YYMMDD)*	BY	20. RECEIVER'S VOUCHER NO.

Form 1149, DEC 93 (EF)

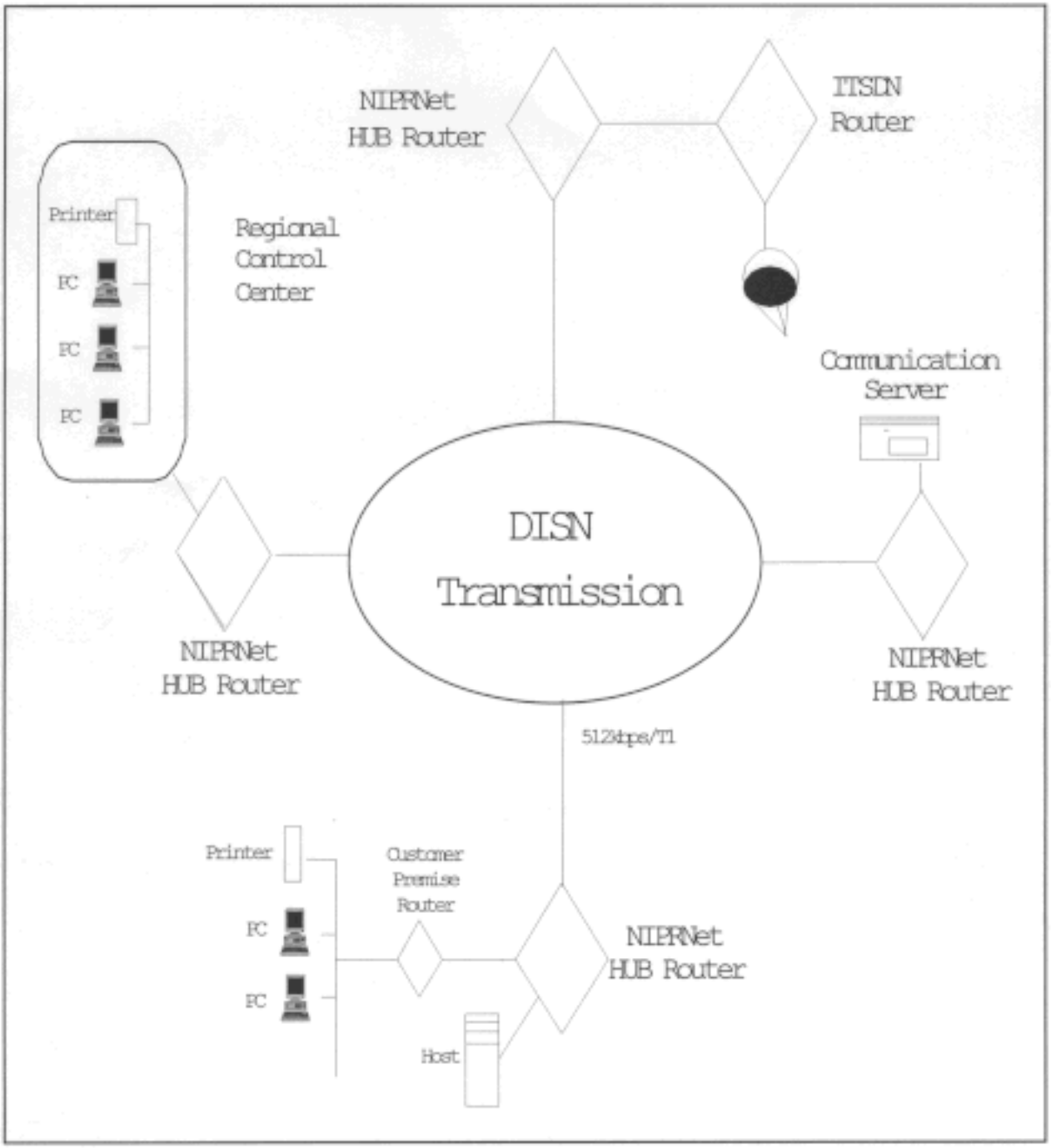
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

DD

SUPPLEMENT 1. FIGURE F1 **TYPICAL IPR CONFIGURATION**

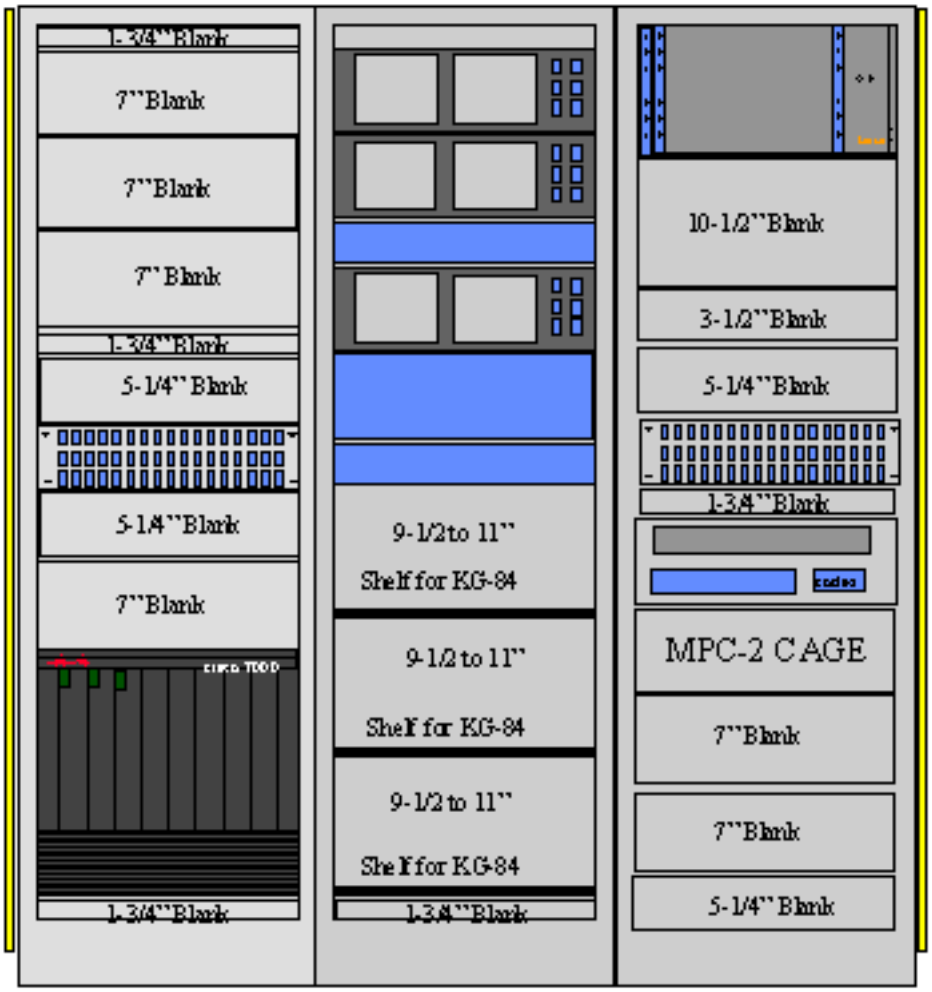


SUPPLEMENT 1. Figure F2 SAMPLE NIPRNET NETWORK CONFIGURATION



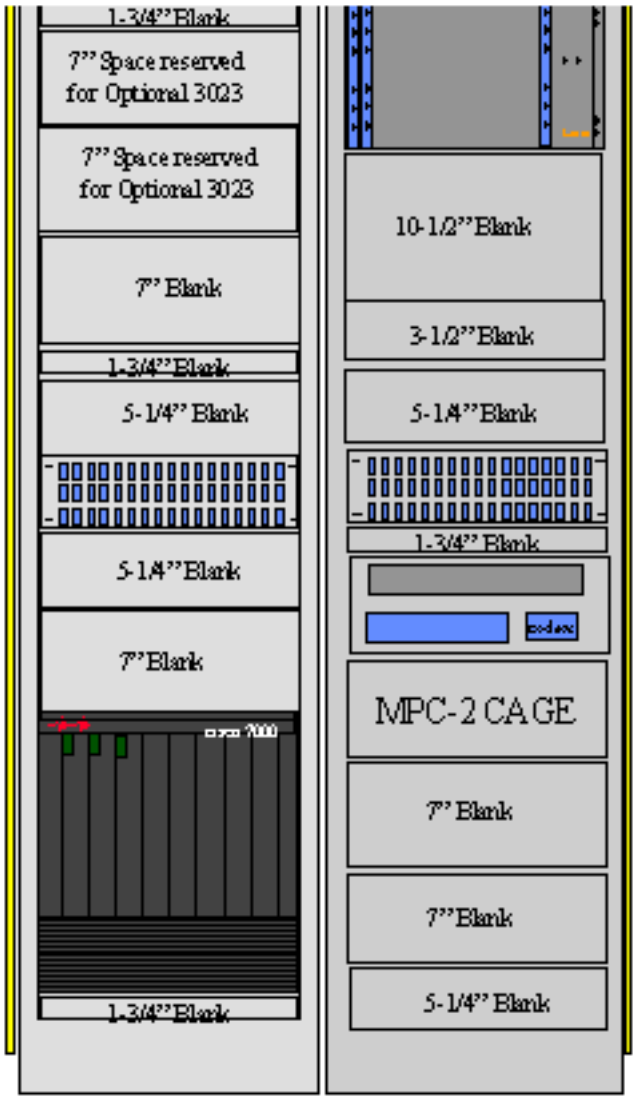
SUPPLEMENT 1. Figure F3 SIPRNET CONFIGURATION

3 RACK SIPRNET CONFIGURATION WITH CISCO 7000

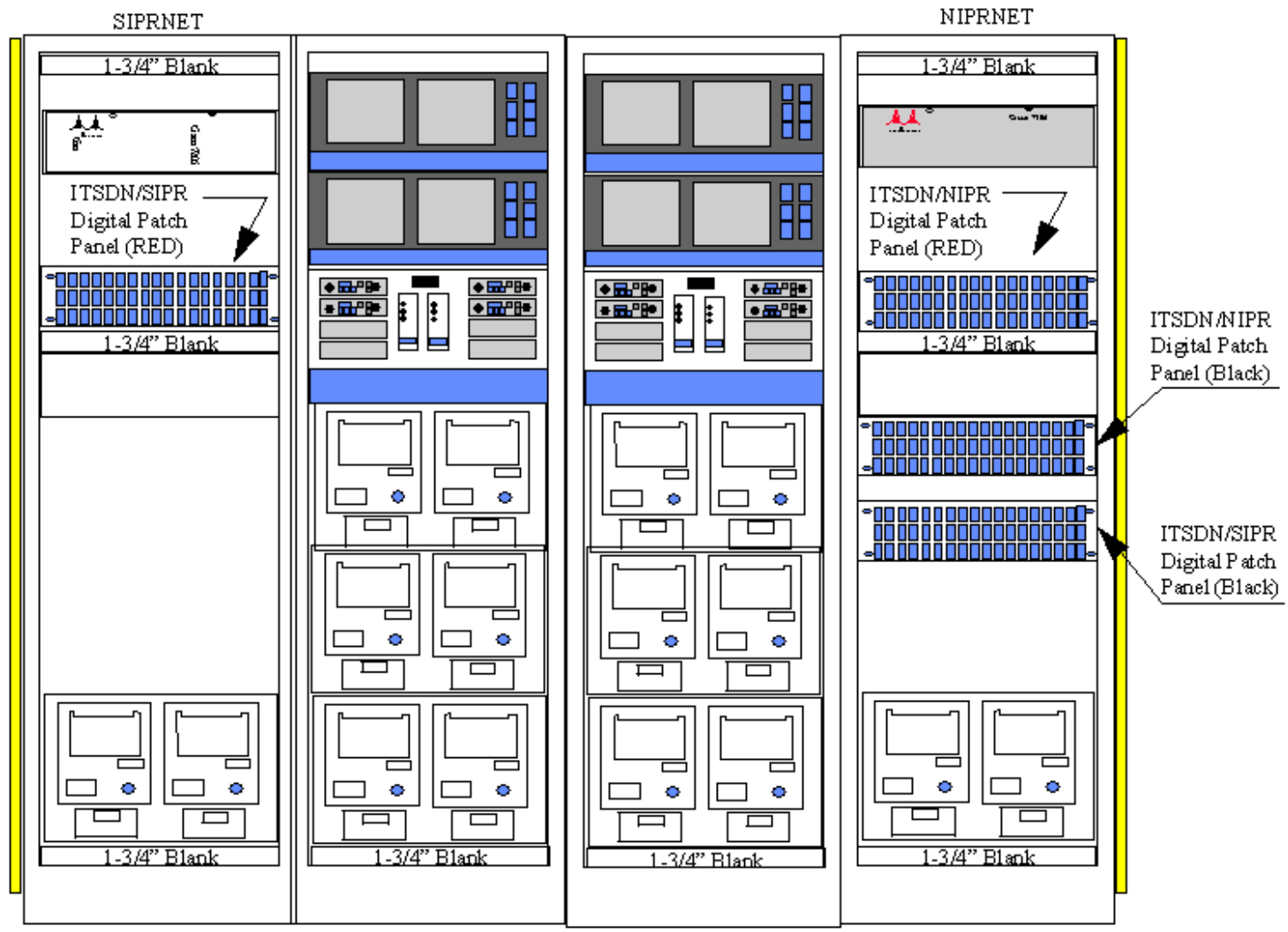


SUPPLEMENT 1. Figure F4 NIPRNET CONFIGURATION

2 RACK NIPRNET CONFIGURATION WITH CISCO 7000

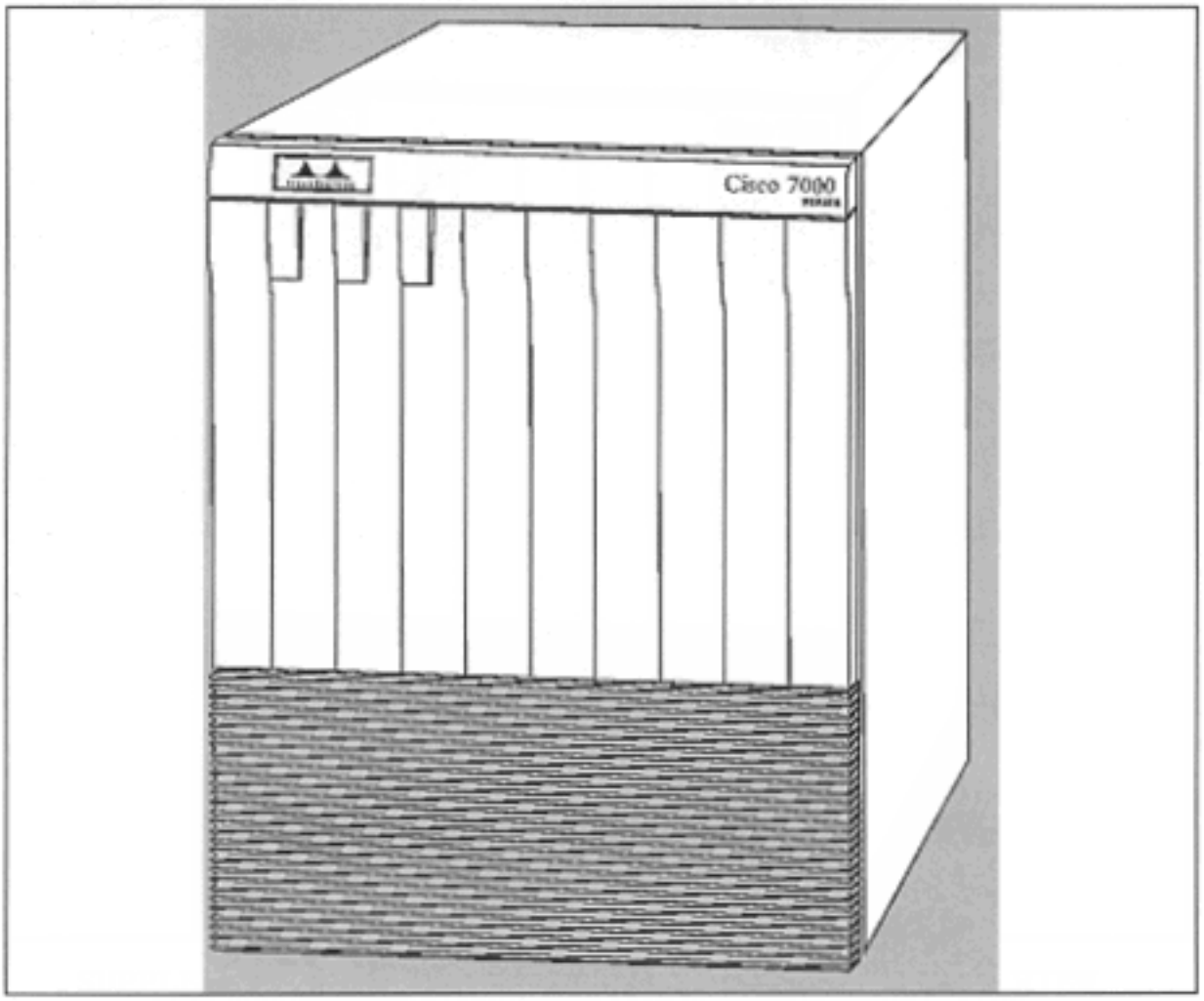


Supplement 1. Figure F5.

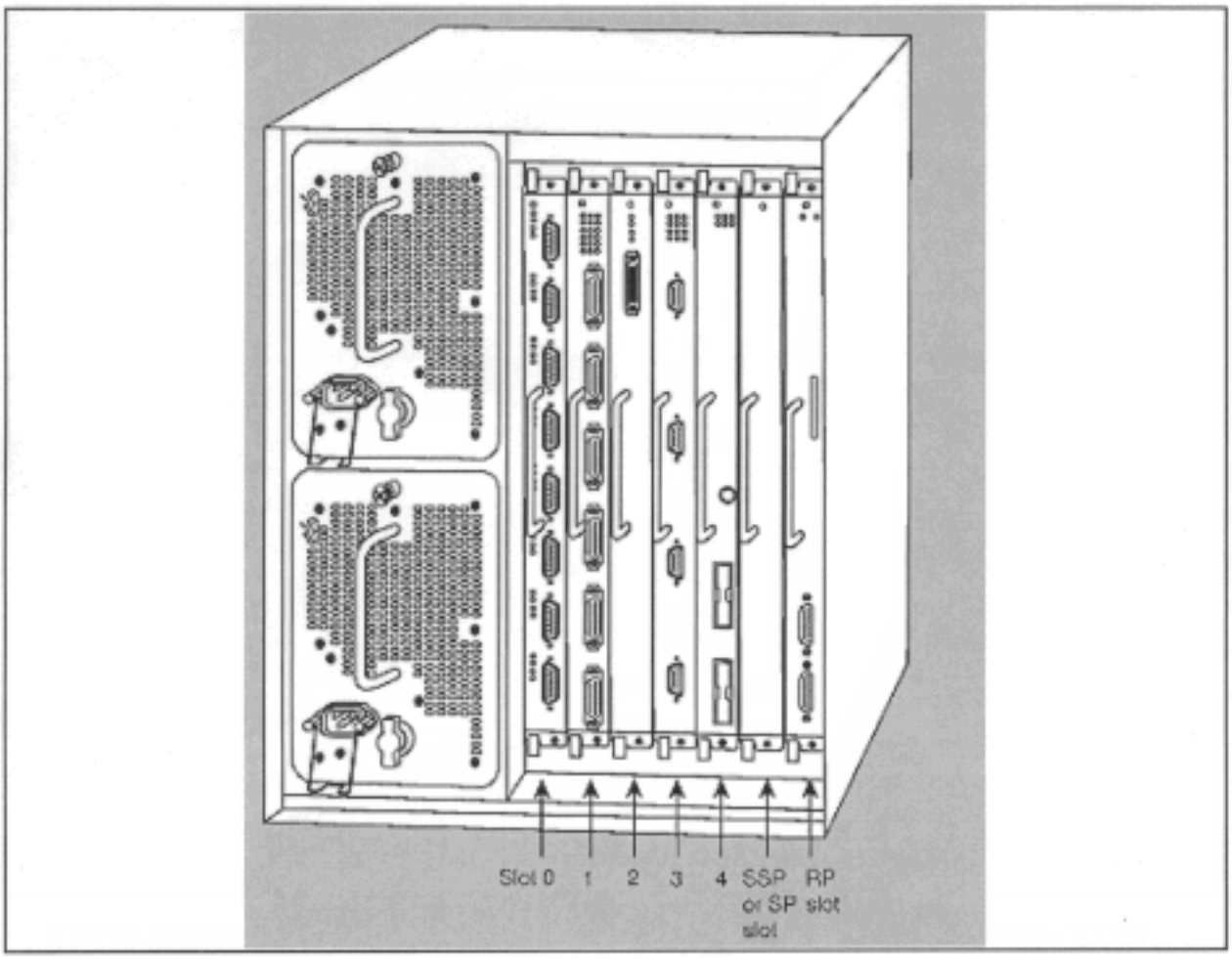


ITSDN Suite with Cisco 7206 Routers, 8 KG-84s,
4 KIV-7s and 4 KG-194s in the NIPRNET and SIPRNET Systems

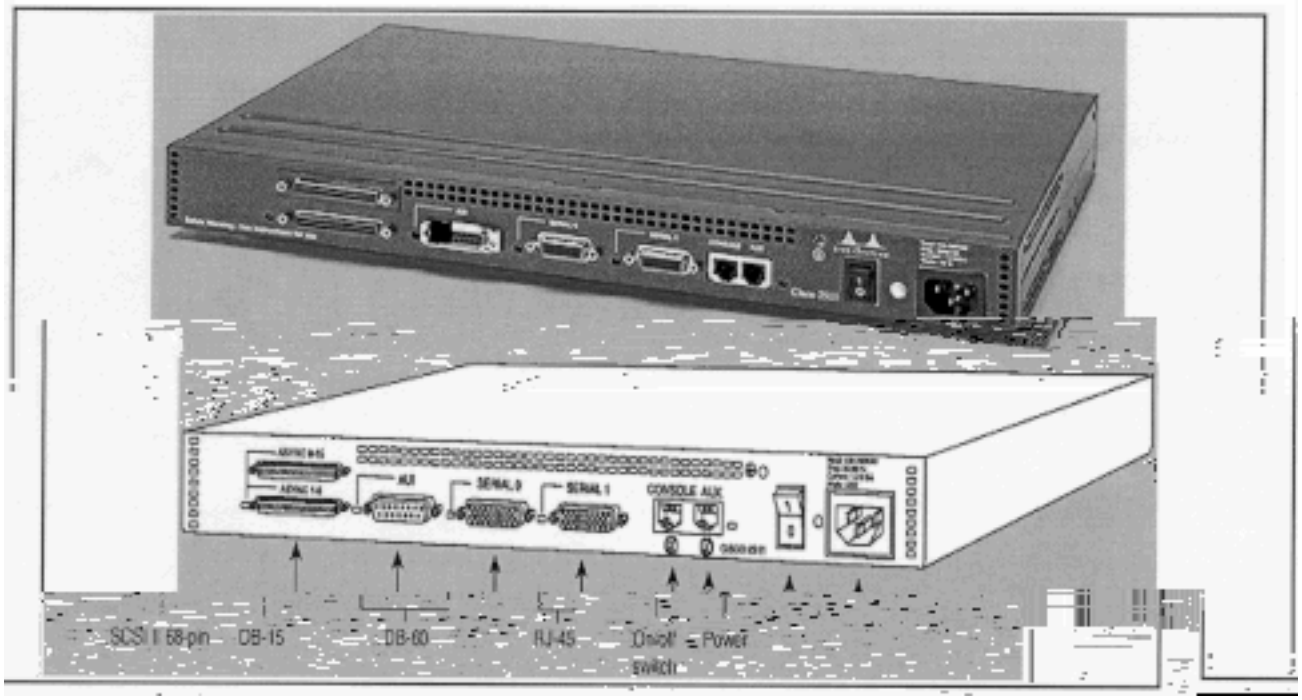
Supplement 1. Figure F6 CISCO 7000 FRONT VIEW



Supplement 1. Figure F7 CISCO 7000 REAR VIEW

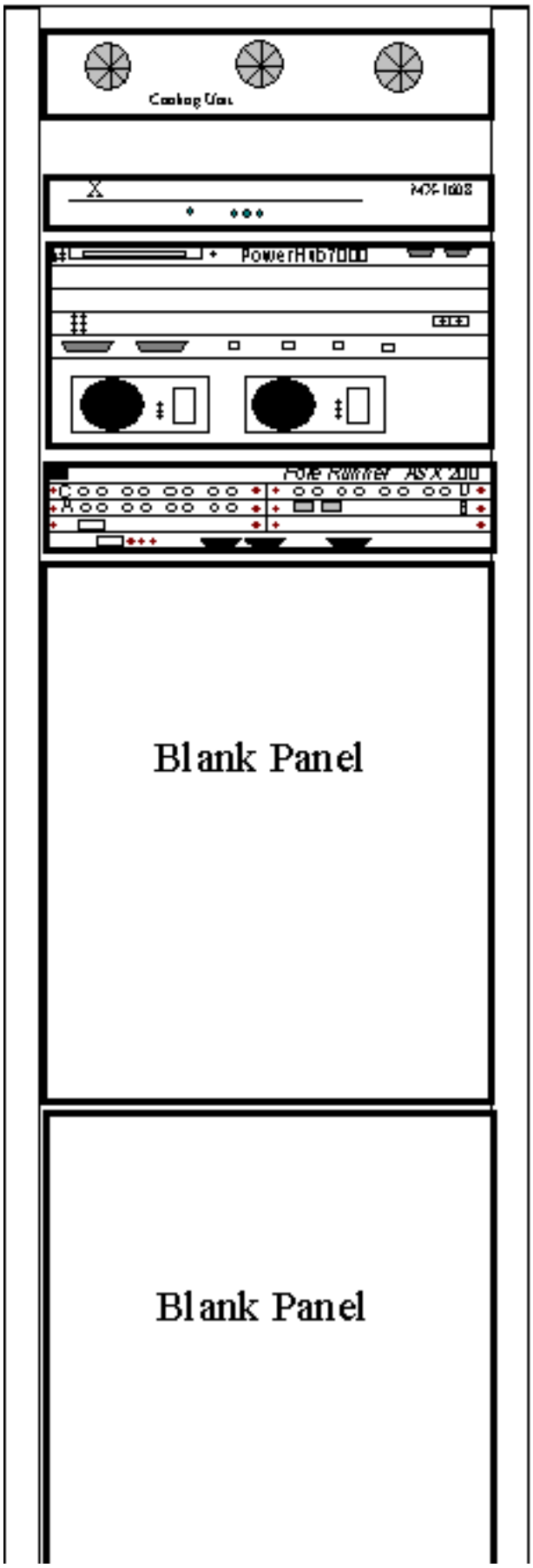


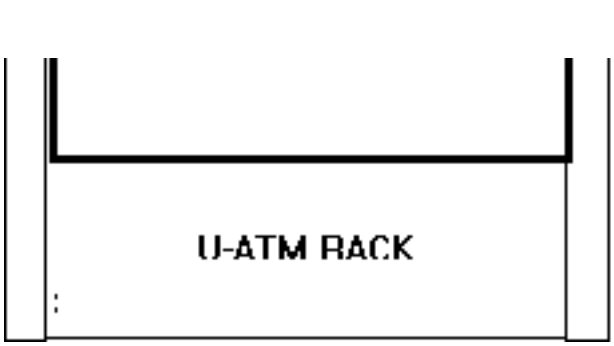
Supplement 1. Figure F8 Cisco 2511 Communications Server Front and Back



Supplement 3. Figure F1

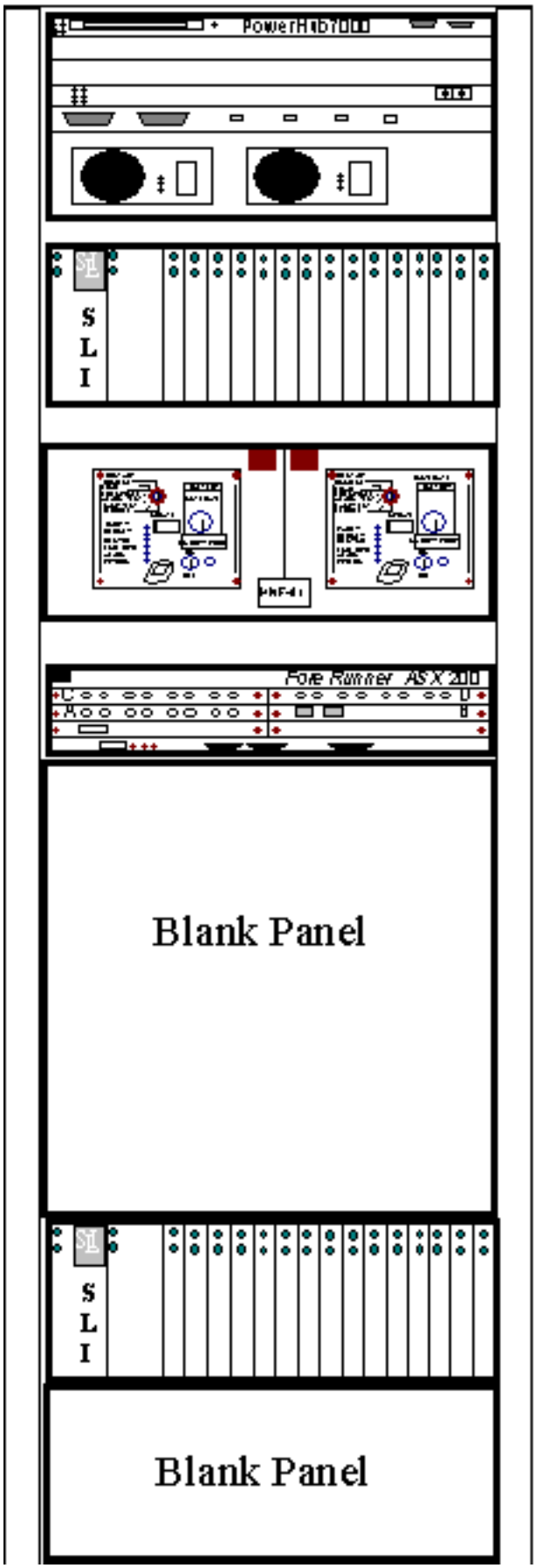
U-ATM RACK




U-ATM RACK

Supplement 3. Figure F2

S-ATM One Rack



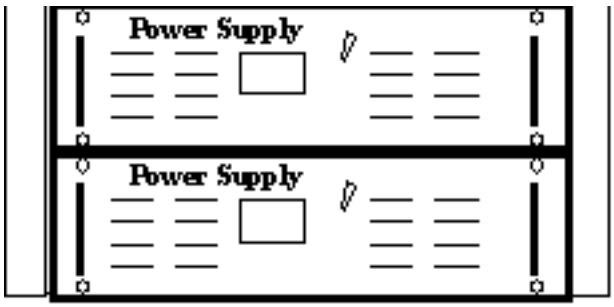
Powerhub- 7000

SLI 1500
(RED)

Two KG-194s
In An HNF-81

ASX-200 BX

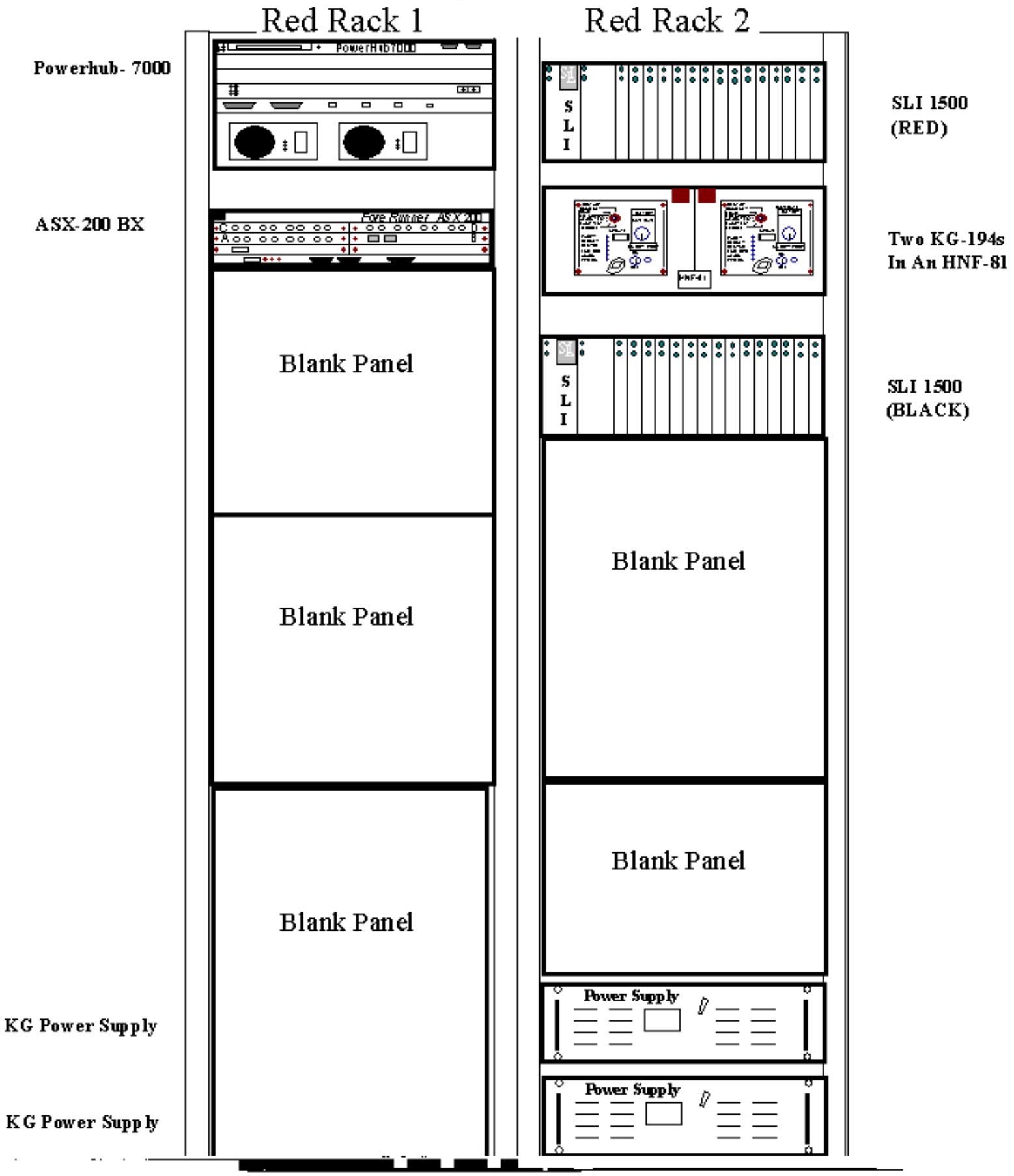
SLI 1500
(BLACK)



KG Power Supply

KG Power Supply

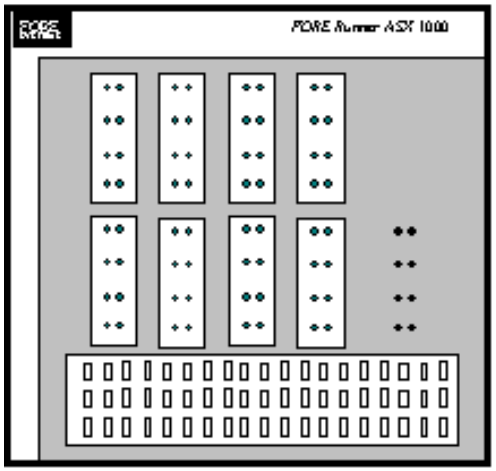
Supplement 3. Figure F3. S-ATM Two Rack



* Black SLI position may change if co-location with Red rack is a security concern. Line drivers will be

necessary if colocation is a problem.

Supplement 3. Figure F4. Additional Equipment

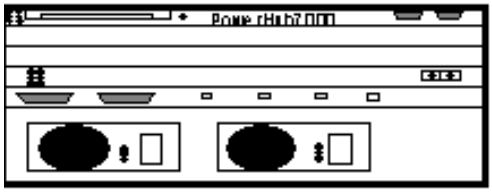


ASX-1000
10 Amps - 1200 W

A highly expandable ATM switch. Supports up to a 10 GB back plane, 4 processor cards, 16 netmods, and 64 ATM ports at T1, T3, OC-3, OC-12, and TAXI.

ASX-200
3 Amps - 360 W

The standard ATM switch. Supports a 2.5 GB back plane, 1 processor cards, 4 netmods, and 16 ATM ports at T1, T3, OC-3, OC-12, and TAXI.



Powerhub 7000
6 Amps - 720 W

An edge device that supports routing and bridging of traffic over an ATM network. It supports Ethernet, fast Ethernet and FDDI standard connections, and LANE 1.0 over an OC-3 ATM port.

SLI 1500
3.5 Amps - 420 W

An ATM multiplexer that inexpensively multiplexes-switches configured amounts of traffic over serial, T1, T3, and OC-3. It also supports serial traffic over ATM.

TABLE T2.1. **Quarterly Preventive Maintenance Checks**

#	Item	Yes	No
1	DISN cabinets are wired to individual circuit breakers and properly labeled in accordance with the Site Concurrence Letter.		
2	DISN racks are grounded to the facility station ground.		
3	Cabinet cabling and wiring is completed in a proper and acceptable manner. Cables will be neat and properly secured with fasteners, such as tie wraps, to allow easy access to equipment. Cables will be properly run through cable conduit, troughs, and/or ladders.		
4	The area surrounding the equipment racks is free of obstructions to air outlets and intakes.		
5	There are at least 3 feet of space in front and behind equipment racks as required for DISN equipment.		
6	Classified systems are in a controlled access secure area.		
7	Circuit data cards depicting signal flow throughout the facility are readily available.		
8	Contractor personnel who been granted access to the facility: (1) have their presence annotated in the visitor's log and (2) have their movements within the facility monitored and controlled.		
9	Where spares are authorized, there is an adequate supply on hand and replacement circuit cards are kept in antistatic bags during receipt, storage, and/or subsequent transport.		
10	A completed and signed copy of the site concurrence letter is available.		
11	History folders are kept with the current Telecommunications Service Order (TSO), completion reports, and circuit diagrams in accordance with DISAC 310-70-1, DII Technical Control.		
12	Circuit appearances (i.e. patch panels, cables, equipment) are labeled for easy identification.		

Return to:
Chapter 2
Basic Circular
Publication Listing
DISA Home Page

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SUPPLEMENT 1. Table T1

IPR NODE SUITE EQUIPMENT SPECIFICATIONS

Equipment	Description	Capability
Cisco Router or Equivalent	Cisco may use CSC3 or CSC4 processor or 7000 simms	Up to 64 Interfaces
ADC	Digital Patch Panel	18 DB25 Physical Patches
Converter*	Line Conditioner	Various
Pulse Model 3023	Crypto Housing	Adapts KG-194
KG-194A	Encryptor	High Rate Crypto
KG-84A	Encryptor	Rates up to 64K
Larse T-1500	DSU/CSU Shelf	Up to 15 T1 DSUs
Codex 35XX series modem	Multiple CSU/DSUs	DDS Rate DSUs
MPC-2*	Protocol Converter	Various
Wellfleet Series LN	ITSDN Nodes Router	Up to 24 Interfaces

*Converter and Line Amplifier type will depend on the specific application.

Return to:
Table of Contents
Publication Listing
DISA Home Page

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SUPPLEMENT 1. TABLE T2

KG-84A STRAPPING CONFIGURATIONS

BOARD	FUNCTION	STRAPPING
A1-	ETCT	J6-J7 and J8-J9, BALANCED
A1-	XMT CTRL/CTTR	J15-J16 and J12-J13, BALANCED
A1-	INTERFACE	J17B, 84-POSITION
A2-	TCTC	J6-J7 and J9-J10, BALANCED
A2-	CLE LOCK	J20-J22, DISABLED
A2-	CTCD/CTRS	J15-J16 and J12-J13, BALANCED
A2-	CTCD/CTRS	J17-J18 84-POSITION
A5-	TIMEOUT	J9-J10, ENABLED
A5-	VUX	J5-J6, ENABLED
A5-	FILL SELECT	J12-J13, 84 POSITION
A6-	U UPDATE	J7-J8, ENABLED
A9-	RED I/O	J14-J16, BALANCED
A9-	TX CLOCK	J11-J12, CONTINUOUS
A9-	STEP PULSE	J9-J10, DOUBLE

Return to:
Table of Contents
Publication Listing
DISA Home Page

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SUPPLEMENT 1. TABLE T3

PROTECTED SWITCH SETTINGS

SWITCH	SETTINGS
CLOCK	1
DATA MODE	2
DATA RATE - TX Rotary	8
Toggle	B
DATA RATE - TX Rotary	8
Toggle	B
STEP PULSE INTERVAL ROTARY	1
Toggle	+0
TTY MODE	1
INTFC	3
DATA LENGTH	SYNC
SYNC MODE	5
COMM MODE	1

Return to:
Table of Contents
Publication Listing
DISA Home Page

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